

ENVIRONMENTAL ASSESSMENT REPORT
University Heights Sites C and E

Prepared for

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1.0 INTRODUCTION: PROGRAM OBJECTIVES

J M Sorge, Inc. (JMS) has been retained by K. Hovnanian Companies of North Jersey, Inc., to perform environmental evaluation and remediation activities at University Heights Development Sites C and E, located in Newark, New Jersey. The objectives of the program are as follows:

- o Identify and remove all underground tanks and associated contaminated soil;
- o Conduct soil testing as necessary to determine quality of fill on site;
- o Supervise the removal of contaminated soils and conduct post-excavation confirmatory sampling; and,
- o Document the testing and cleanup conducted on site.

This report details the findings of the initial phase of these activities, including site investigation and subsurface evaluation, and contains proposed remedial activities regarding areas of contaminated soil and the underground storage tanks not associated with occupied dwellings or businesses at the time of this investigation. As additional properties become accessible, they will be investigated and remedial plans developed accordingly.

1.1 APPROACH

In August 1989, a limited investigation of portions of this area was conducted. Subsequently, beginning on June 19, 1992 and continuing until July 10, 1992, JMS field personnel investigated the sites through a number of means in order to identify potential areas of environmental concern. The findings of the original investigations have been incorporated into this report. Initially, JMS personnel visually inspected the site to determine the presence of stained soils, refuse, storage tanks or other potential causes of environmental degradation.

The visual inspection was followed by a subsurface evaluation, using electromagnetic remote sensing to identify potential underground storage tanks. This was followed by trenching, test pit installation and soil boring installation to evaluate tank location and condition, and to delineate any areas of contamination.

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2.0 ENVIRONMENTAL SETTING

Sites C and E comprise seven (7) blocks in the University Heights section of the City of Newark. A site location map is provided as Figure 1. Site C consists of city tax blocks 403, 408, and 409; Site E consists of blocks 404, 405, 406, and 407. A site plan is provided as Figure 2. The predominant land use within the surrounding area is residential with less than 10 percent commercial use. The sites were formerly residential tracts, however a gradual decline in the area resulted in the ultimate demolition of most of the existing structures by the City of Newark. The demolition consisted of leveling and filling the condemned portions of the site. Apparently, the residential heating oil tanks were not removed from the site prior to demolition. Further, the quality of the fill material used to grade the site was not established at the time of placement.

2.1 REGIONAL GEOLOGY

The site lies within the Piedmont Physiographic Province. The Piedmont Province is underlain by Triassic and Jurassic rocks of the Newark Group. These rocks are classified into four (4) formations: The Stockton Formation, the Lockatong Formation, the Brunswick Formation, and the Watchung Basalts.

The Stockton Formation consists of grey feldspathic sandstone, arkosic conglomerates, and red shale, and is locally up to 2800 feet in thickness. The Lockatong Formation rests conformably on the Stockton and consists of grey and black siltstone. At its type section it is over 3300 feet thick. The Brunswick Formation is the youngest sedimentary member of the Newark Group. This formation is of Triassic to Early Jurassic age, and consists of interbedded brown, reddish-brown and grey shale; sandy shales; sandstone; and some conglomerates. The total thickness of the Brunswick Formation exceeds 6000 feet.

The Watchung Basalts are a series of three (3) extensive lava flows of the same age as the Brunswick Formation, and can be found interbedded with it.

2.2 REGIONAL HYDROGEOLOGY

The rocks of the Brunswick Formation are the main source of groundwater in Essex County. Water in these rocks occurs under confined and semi-confined conditions in the lowland areas of Newark where clay beds or till mantle the underlying rocks. Artesian pressure may be considerably reduced, or become unconfined due to the heavy pumping in the Newark area.

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Groundwater exists in unconfined or confined conditions in Pleistocene glacial deposits above the bedrock. The unconfined groundwater occurs where sand and gravel deposits are not covered by clay, silt or till. These deposits are commonly less than 20 feet thick and do not yield large quantities of water. Confined and semi-confined groundwater occurs where sand and gravel deposits have been covered by clay, silt or till. These aquifers are found in buried bedrock valleys.

The shales and sandstones are generally capable of sustaining moderate to large yields. The best producing wells in the Brunswick Formation are commonly between depths of 300 to 400 feet. Drawdown due to pumping is greatest in the strike direction, (approximately North 30° East) and least in the direction perpendicular to strike. The average yield of large diameter production wells is in the range of 300 to 400 gallons per minute (gpm). Groundwater has been encountered on adjacent sites at depths of 13 to 20 feet. However, the presence of leaking water mains and buried basements has resulted in perched water zones at various intervals.

2.3 SITE SPECIFIC CONDITIONS

Sites C and E were extensively reworked during the process of demolition of the condemned housing and leveling of the area that occurred prior to this investigation. A soil boring program indicated that fill material consisting of building rubble, fill soils, and debris had been used during the post-demolition grading of the sites. Also, examination of the older maps from the City of Newark indicated that the area underwent considerable redevelopment during the period between 1910 and 1925. A review of aerial photos of the area from 1940, 1951, 1961, and 1974 indicates that the site was relatively stable until the period of 1961 thru 1974. Much of the demolition and grading of the site occurred at that time.

The soil boring and trenching investigation results indicate that native soils in the site area have been covered to an average depth of approximately nine (9) feet. The material overlying the native soils is predominantly composed of reworked stony, sandy red soil derived from the Brunswick Formation. This is the material typically found in the block interiors. Bedrock is present at depths ranging from 2 to 15 feet across the site, trending deeper north of West Market Street toward Warren Street. The material that was used to fill the foundations of demolished buildings was composed of soil fill, building rubble and debris.

A great deal of trash has been dumped on the surface of the site over the years. This trash consists mainly of domestic garbage and automobile parts. Nothing of a serious hazardous nature (e. g. drums, industrial waste, etc.) was found on the sites.

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3.0 SITE INVESTIGATION

Preliminary site inspections identified several areas of potential environmental concern on Sites C and E. A number of tanks were located during the preliminary investigation based on a surface inspection of the area. The presence of tank fill ports and vent pipes along the sidewalks were used to identify tank locations. Surface debris was taken as an indication of potential problems associated with the types of material used as fill. Several areas of concern were identified based on a review of aerial photographs and other conditions. The potential areas of concern included the following: surface staining and refuse piles in vacant lots on blocks 408 and 409, and the presence of auto repair shops and garages on blocks 404 and 407. The results of the previous investigation and cleanup completed on adjacent sites provided the basis for assessment of probable subsurface conditions based on the results of this field program. Experience from these previous programs also provided the basis for selection of investigative methods best suited for this area.

The following sections detail the investigative procedures used to evaluate each of these concerns, and the findings of this phase of the investigation.

3.1 BLOCK PERIMETER TRENCHING

In previous work in the adjacent development sites, most of the underground storage tanks (USTs) were located below or adjacent to sidewalks. Aerial photos confirm that much of the seven-block area was occupied by long narrow houses with limited access to the sides and backyards. This type of arrangement made it necessary to locate heating oil tanks in front of the houses to allow access for filling.

The most practical method for locating tanks was exploratory trenching. The trenches were installed using a rubber-tire backhoe along the former block perimeters. Since much of the property was unoccupied, perimeter trenching was almost complete. Figure 2 illustrates the completed trenching program.

3.2 BLOCK INTERIOR SURVEY

The interior portion of each block was investigated using a three-fold approach. First, an electromagnetic survey was conducted to locate tanks, drums or other large metallic objects in the subsurface. Electromagnetic "hot spots" were then investigated through the use of soil borings, test pits and trenches.

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In addition to the electromagnetic survey, a general site-wide soil boring and test pit grid survey was conducted. Due to obstructions such as buildings, fences and walls, the 50-foot grid survey had to be modified to assure good coverage of the site. Each soil boring and test pit was logged and the characteristics and composition of soils noted.

Cuttings from each boring were field screened using a portable photoionization organic vapor detector and selected samples were kept for laboratory analysis. Soil boring logs and test pit logs are included as Appendix A. The locations of the soil borings and test pits are indicated on Figure 2.

All of the electromagnetic "hot spots" observed in the block interiors were further evaluated during the subsequent drilling and test pit installation program. These were found to be caused by metallic debris such as old pipes, auto parts and metal scrap.

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4.0 FINDINGS OF INVESTIGATIVE PHASE: AREAS OF ENVIRONMENTAL CONCERN

On the basis of the investigation described above, a number of areas of environmental concern have been identified at sites C and E. These include the locations of 25 improperly abandoned underground storage tanks and three (3) areas of contaminated soil. Each of these areas is illustrated on Figures 3 through 9 which provide detail maps of each block. The following sections detail the specific findings of the trenching, soil boring, and test pit programs in terms of these areas of concern. Areas of concern have been broken down according to development site and tax block.

4.1 UNDERGROUND STORAGE TANKS

A total of 25 underground storage tanks have been identified as a result of this study. Two (2) of these tanks appear to contain weathered gasoline and water; the remaining tanks all appear to contain varying quantities of water and/or fuel oil. Due to their sizes and to the fact that all of the tanks were associated with residences, none of the tanks are regulated under New Jersey's Bureau of Underground Storage Tanks (BUST) regulations.

4.1.1 Site C

BLOCK 403

The tank locations identified on this block are illustrated on Figure 3. The perimeter trenching operation identified three (3) underground storage tanks on Block 403. One tank (T403-1) was not exposed due to its position under the corner of a yard belonging to an occupied residence. The tank does not appear to be connected to said dwelling. It appears that it was left in place during the demolition of a neighboring house, whose lot was then acquired by the owner of the existing dwelling. The existence of the tank was determined when trenching activities outside the fenced area uncovered the feed and return lines and the vent pipe for the tank.

Tank T403-2 is a 550-gallon heating oil tank underneath the sidewalk in front of an abandoned dwelling. Tank T403-3 is a 500-gallon tank, possibly containing gasoline, found at one corner of an empty lot. This tank is believed to have been associated with a former residence at this now vacant lot.

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BLOCK 408

Tank locations on Block 408 are illustrated on Figure 4. Four (4) USTs have been identified on block 408. Tank T408-1 is a 550-gallon heating oil tank located approximately mid-block along Newark Street. Tank T408-2 is a 1000-gallon kerosene tank located along Newark Street toward Warren Street. Tank T408-3 is a 550-gallon gasoline tank located in a vacant lot approximately 20 feet from T408-2, in an area of extensive PHC contaminated soils (described below). Tank T408-4 is located under new sidewalk at the corner of Norfolk and Warren Streets. Due to the busy nature of the intersection and the restricted access to the tank area, the tank was not uncovered, and it was impossible to determine the amount and type of product, if any, remaining inside. All of these tanks are believed to be associated with former residential structures.

BLOCK 409

Tank locations on Block 409 are illustrated on Figure 5. Three (3) heating oil tanks have been identified on this block. Tank T409-1 is a 1000-gallon UST located near the corner of Wilsey and Academy Streets. Tank T409-2 is a heating oil tank estimated at 1500 gallons capacity, located in front of an abandoned dwelling on Lot 30 along Newark Street. Tank T409-3 is a 275-gallon heating oil tank that was formerly located in the rear basement of an abandoned house on Lot 19 along Wilsey Street. The house was demolished on or about July 10, 1992, with the tank still in the basement. The tank was subsequently excavated from the rubble and removed from the basement and placed a short distance from the former house, under the supervision of JMS personnel. The tank was observed to be empty of product and in good condition at the time of removal.

4.1.2 Site E

BLOCK 404

Figure 6 illustrates the locations of the tanks identified on Block 404. Six (6) heating oil tanks were identified on this block. Four (4) are located in the basements of abandoned houses. Of these four, two (T404-2 and T404-3) have been determined to be 275-gallon oval tanks. Both of these were found along Academy Street. Due to the uncertain structural integrity of the dwellings in which they are located, and the lack of direct access from outside the dwellings, the other two (2) basement tanks (T404-5 and T404-6) were not directly investigated. However, it is reasonable to assume that they are also 275-gallon tanks similar to the others. Once the dwellings have been demolished these two (2) tanks will be addressed in detail.

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The two (2) remaining tanks were uncovered during trenching operations along Academy Street and School Street. Tank T404-1 is a 550-gallon tank located beneath the sidewalk in front of an abandoned house along Academy Street. Tank T404-4 is a 1000-gallon tank in front of an empty lot across from the elementary school. Both tanks contain heating oil.

In addition, the garage of an abandoned house along Academy Street (Lot 20) appears to be an area of concern. A sign indicates that the garage used to be an auto repair shop. There is a great deal of refuse in the garage, and the floor appears to be heavily stained with motor oil. Due to restricted access, further investigation of this area will have to be delayed until the structure is demolished and the debris removed.

BLOCK 405

Tank locations identified on Block 405 are illustrated on Figure 7. Five (5) USTs have been identified around the perimeter of this block. One, Tank T405-1, lies beneath the pavement in front of the recently demolished brick church along West Market Street. The tank is estimated to be of 1500 gallons capacity, and contains a small amount of No. 2 heating oil and water.

Due to the presence of underground utilities, including power lines and fiber-optic phone lines, the tank was not exposed.

The remaining tanks, T405-2 through T405-5, were exposed by trenching activities along Academy Street. Tanks T405-2 and T405-3 are both 550-gallon heating oil tanks. Tank T405-3 appears to have leaked at some time in the past, but based on the trenching activities it appears that a limited area has been affected, and the volume of soils that will require removal is limited.

Tank T405-4 is a 1000-gallon heating oil tank. Stained soils near the fill port indicate that some spillage has occurred, but again the area affected appears to be limited.

Tank T405-5 is an odd-sized tank, estimated at 850 gallons capacity. There is no evidence of leakage around this tank, which contains heating oil.

BLOCK 406

Tank locations on Block 406 are illustrated on Figure 8. Four (4) underground heating oil tanks have been identified along the perimeter of Block 406. Three (3) tanks, T406-1 through T406-3, were located along West Market Street in the immediate vicinity of buried utility lines, as described above. For this reason the tanks were not uncovered.

Tank 406-4 is a 550-gallon heating oil tank which was uncovered by trenching activities along Newark Street.

BLOCK 407

Figure 9 illustrates the locations of tanks on Block 407. No underground heating oil tanks were encountered during trenching activities along Block 407. Two (2) tanks have been visually identified, but both are attached to occupied dwellings.

4.2 CONTAMINATED SOIL AREAS

Seven (7) areas of contaminated soil apparently not associated with underground storage tanks were also identified as a result of this investigation. One additional area of suspect soil was identified on the basis of field conditions but sample analysis did not confirm significant levels of contamination. The results of the investigation conducted on each block are discussed in the following sections.

Soil samples were submitted for analysis on the basis of observed field conditions. Samples were analyzed for various combinations of parameters, including petroleum hydrocarbons (PHC), volatile organic compounds with a forward library search (VO+), base neutral extractable organic compounds with a forward library search (BN+), acid extractable organic compounds (AE), priority pollutant metals (PPM), polychlorinated biphenyls (PCBs), pesticides, cyanide and phenols. Analytical results were compared with the most stringent of NJDEPE's proposed cleanup standards for residential sites, in accordance with recent directions and recommended practices issued by the NJDEPE. Table 1 provides a summary of the proposed standards for all of the compounds identified in this investigation. Areas of contaminated soil for which remedial actions are necessary were defined on the basis of the proposed standards.

4.2.1 Site C

BLOCK 403

A total of fourteen (14) samples were collected on Block 403 (Figure 3). The samples were concentrated in the area of a vacant lot along Wilsey Street, where visual observation indicated that the area had been used for auto repairs and garbage disposal. Several test pits and trenches were installed in order to determine the subsurface impact of widespread surficial staining apparently caused by motor oil, transmission fluid, and brake fluid. Visual inspection of the trench profiles indicated that the surface staining did not penetrate to a significant depth, and the trench samples have confirmed a clean subsurface environment. At sample location 403-6 low levels of a number of BN compounds were identified at concentrations slightly exceeding the applicable standards. However, only relatively limited surficial soil removal will be necessary in most of this area.

One sample, 403-7, was collected from suspect fill material found in a relict basement adjacent to an existing structure. This sample yielded a lead concentration of 428 parts per million

(ppm) and a trace of the BN compound chrysene, both of which are in excess of the applicable standards. This material will be excavated and removed for proper disposal. Details of the proposed remedial actions are discussed in Section 5.0.

The remaining accessible portions of Block 403 appeared not to have been subject to adverse environmental conditions. Trenches and test pits uncovered mixed fill and soil to a depth of approximately six (6) feet in some locations, but encountered no further evidence of contamination. Table 2 provides a summary of the analytical results for samples from this block. Laboratory data are provided in Appendix B.

BLOCK 408

Twenty-seven (27) samples were collected on Block 408. Of that total, twenty-two (22) were obtained from test borings, with the remaining five (5) being collected from exploratory trenches. Sample locations are depicted on Figure 4.

Several areas of concern had been previously identified on Block 408. These comprise an area of stained soil along Newark Street which extends toward a large brick building fronting on Norfolk Street, and an area of stockpiled soil near the corner of Newark and Warren Streets. Samples 408-2 through 4A, 6, 7 and 408-11 through 15 were collected from the area of the stained soil, which is reputed to be the result of illegal dumping of heating oil.

Analytical results for these samples are summarized on Table 3. The results have identified PHC, numerous BN compounds, and lead at concentrations exceeding the applicable standards. Field observations and analytical results indicate that contamination in this area extends to depths of between 6 and 9 feet. The total volume of contaminated soil in this area is estimated at 1950 cubic yards or 2600 tons. This material will be excavated and removed for proper disposal. Details of the proposed remedial actions are outlined in Section 5.0.

The area of stockpiled soils is immediately adjacent to the stained soils location discussed above. Three (3) samples were collected from the stockpile area. Two (2) samples, 408-20 and 408-21, were taken from test borings at a depth of 10.5 to 11.0 feet, and analyzed for PHC. The third sample, 408-PS, was taken from the top surface of the stockpile, and analyzed for Priority Pollutants Plus 40 (PP+40). Samples 408-20 and 408-21 yielded non-detect readings, but sample 408-PS indicated the presence of BN compounds and lead at concentrations in excess of the applicable standards. JMS proposes to conduct additional sampling, including waste classification sampling of the stockpile in order to determine if any of the stockpile can remain on site. Please refer to Appendix C for a description of waste classification sampling procedures and frequency.

Of the remaining samples collected of Block 408, 408-16 yielded results in excess of applicable standards for PHC and benzo(b) fluoranthene. This sample was obtained adjacent to a back yard near a garage. It is likely that the contamination encountered in this sample is the result of a very localized oil spill related to auto repair, since the rest of the area appears not to have been affected. JMS proposes to remove a limited amount soil in the area of this sample, to be followed by post-excavation confirmatory sampling.

Sample 408-19 contained a number of BN compounds in excess of applicable standards. Again, contamination in this area appears to be relatively limited in extent. This soil will be removed for proper disposal. Please refer to Table 3 and Appendix B for sample results summaries.

BLOCK 409

Seven (7) samples were collected from Block 409 (Figure 5). Six (6) borings were installed on vacant areas of the block surrounding the church located on the corner of Warren and Wilsey Streets. Samples 409-1 through 409-6 were collected from the 10.5 to 11.0 foot depth range, and analyzed for PHC. The laboratory report indicates that no PHC compounds were detected above the analytical Method Detection Limit. One sample, 409-8, was collected from a trench installed along the wall of a garage fronting on Wilsey Street. The garage is currently being used by the City of Newark to store construction equipment and other vehicles. The sample was collected from the 3.5 to 4.0 foot depth interval, and analyzed for PHC and VO+15. While trace amounts of each parameter were detected, the results were far below the applicable standards. Refer to Table 4 and Appendix B for sample results summaries.

Despite the presence of extensive construction debris on the vacant portion of the block covered by samples 409-1 through 409-6, the exploratory program did not encounter any chemical contamination associated with the physical debris.

Based on the results of the soil sampling program conducted on this block, no additional soil removal is deemed necessary beyond that involved with the tank removal program.

4.2.2 Site E

BLOCK 404

Six (6) samples from this block were submitted for analysis during the 1989 sampling episode. One additional sample was collected as part of the most recent phase of investigation. The sample locations are indicated on Figure 6.

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Samples B404-1 through 4 were collected during the 1989 investigation. The samples identified low levels of PHC, VO compounds and the pesticides dieldrin, DDT and heptachlor, all at concentrations well below the applicable standards. However, a number of BN compounds and the metals cadmium and lead were identified at concentrations exceeding the standards. The affected area is believed to be relatively restricted in extent. This material will be excavated and removed for proper disposal.

During the recent phase of investigation, Sample S404-2 was taken adjacent to tank T404-1 at a depth of 2.0 to 2.5 feet, and analyzed for PHC. Petroleum hydrocarbons were detected at 315 ppm, well below the standard of 10,000 ppm. Sample results are summarized on Table 5. Laboratory analytical reports are provided in Appendix B.

Additional sampling will be conducted as part of the tank removal program. Sample results may indicate that additional soil removal is warranted. Also, the former auto repair shop along Academy Street requires further investigation which has not been possible to date due to obstruction of the area by the remains of the former structure and construction debris. JMS proposes exploratory excavation of the former auto shop location. Investigative samples may be collected if field conditions warrant. Based on the results of any samples from this investigation, additional soil removal may be necessary.

BLOCK 405

One sample was collected from this block during the 1989 investigation. Four (4) additional samples were collected during the most recent phase of investigations. Four (4) samples, 405-1 through 405-4, were obtained from the exploratory trenches installed along the block perimeter. The original sample designated B405-1 was collected from the portion of the site now occupied by the construction yard. Please refer to Figure 5 for sample locations. The recent samples were analyzed for PHC, with one sample (405-4) also being analyzed for BN+15. The original sample was analyzed for priority pollutants plus 40 (PP+40). None of these samples identified any contaminants at concentrations meeting or exceeding applicable standards. Sample results are summarized on Table 6, laboratory analytical reports are included in Appendix B.

Based on these results, we do not anticipate any soil removal in addition to that associated with the tanks identified on this block.

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BLOCK 406

Fourteen (14) samples were collected on Block 406. Eleven (11) were obtained from test borings at varying depths, and three (3) were obtained from exploratory trenches along the block perimeter (Figure 8). Sample results are summarized on Table 7. Laboratory analytical reports are provided in Appendix B. All the samples were analyzed for PHC, with samples B406-6 and B406-9 also being analyzed for Priority Pollutant Metals. Scattered low level PHC concentrations were detected, all far below the applicable standards.

Sample B404-6 contained 209 ppm lead, which exceeds the applicable standard. The concentration is relatively low and is believed to represent a relatively restricted occurrence. The B406-6 area will be excavated to remove the affected soil. Details of the proposed remedial action are discussed in Section 5.0.

BLOCK 407

A total of eight (8) samples were submitted for analysis from Block 407. Sample locations are depicted in Figure 7. All the samples were analyzed for PHC, with the exception of samples 407-1 and 407-2, which were analyzed for PP+40. The Priority Pollutant analysis was specified for these two (2) samples due to the presence of an odor suggesting pesticides which was encountered while installing a trench along Academy Street. However, neither sample indicates the presence of any pesticides in this area. In fact, no contaminants were identified at concentrations meeting or exceeding the applicable standards in any of the samples collected on this block. Sample data are summarized on Table 8, laboratory analytical reports are included in Appendix B. Based on these results, no remedial activities are proposed for this area at this time.

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5.0 DISCUSSION AND RECOMMENDATIONS

As a result of this investigation, 25 improperly abandoned underground storage tanks were identified. In addition, seven (7) areas of contaminated soil unrelated to underground storage tanks have also been identified. None of the tanks are subject to NJDEPES underground storage tank regulations. However, their presence represents a liability to the site and they may have been, and continue to be, sources of contamination. Therefore, all tanks will either be removed or properly abandoned in place as appropriate.

The seven (7) areas of contaminated soil are contaminated with various combinations of PHC, BN compounds, lead and in one case, cadmium. Generally, the concentrations of contaminants are not extremely high. However, in each case residential soil cleanup standards have been exceeded and therefore, some remedial action is necessary. It is significant to note that in none of these areas do hazardous waste conditions exist.

Tank removal and abandonment will be conducted as follows: First, the tank in question will be uncovered or otherwise made accessible by Milltown Drilling and Excavation (MDE). All product removal, tank entry, and cleaning will be performed by representatives of L&L Oil Service, Inc. If necessary, MDE employees will create additional openings in the tank so that it may be completely emptied. The tanks will then be entered and cleaned. Most of the tanks in question are #2 heating oil tanks, and the necessary health and safety precautions are minimal. Two (2) tanks, however, appear to contain gasoline, and additional precautions may be necessary. In these cases, both JMS and MDE will be present with the necessary equipment and materials to secure the tank area in order to assure safe working conditions. Once the tanks have been emptied and cleaned, they will be loaded onto a dump truck and transported to a scrap dealer for disposal. All tank removal and subsurface evaluation work will be performed by personnel certified by NJDEPE Bureau of Underground Storage Tanks.

Following the removal of each tank, contaminated soil will be excavated and removed, if necessary. All contaminated soil will be stockpiled on, and covered with, 6-mil polyethylene sheeting at a designated location on site. Following the removal of any contaminated soil, a minimum of four (4) post-excavation confirmatory samples will be collected from the base of the sidewalls of the excavation. If extensive soil removal is necessary at any location, additional post-excavation confirmatory samples will be collected. In order to maintain site safety, all excavations will be closed immediately following the collection of post-excavation samples. Excavations will be backfilled with existing site materials. All post-excavation samples will be analyzed for PHC. If the PHC concentration of any sample exceeds 500 ppm, the sample will also be analyzed for VO+ and BN+. Stockpiled waste soil will be analyzed for waste characterization purposes and arrangements will be made for its proper off-site disposal.

At this time it is impossible to predict the ultimate volume of soil that will have to be removed as a result of contamination caused by the tanks. However, for purposes of estimation, we have used past experience in the area to arrive at an estimate of approximately 1000 tons for the total contaminated soil associated with the 25 tanks.

Due to the access problem, JMS proposes to abandon four (4) of the tanks in place. The tanks to be abandoned in place are: T405-1, T406-1, T406-2 and T406-3. These tanks are located along West Market Street in the immediate vicinity of buried power and fiber-optic lines. In order to reduce the risk of property damage or injury to site personnel, these tanks will be left in place. After the tanks have been emptied and cleaned, they will be filled with concrete and the excavation will be backfilled. If contaminated soils are encountered in the tank area, as much soil as possible will be removed without jeopardizing the integrity of the underground utility lines. One additional tank (T408-4) is located at the corner of Warren and Norfolk Streets. The tank is located under new sidewalk in close proximity to a busy intersection, with limited access to the tank location. The presence of underground utilities is suspected, and it would be prudent to minimize the disturbance of the area. Therefore, this tank may also be abandoned in place.

Each of the seven (7) areas of contaminated soil will be excavated and removed. In each location, post-excavation confirmatory soil samples will be collected to verify the complete removal of contaminants to the applicable cleanup standards. The following table summarizes each of these areas:

AREA	TOTAL TONNAGE	NO. POST-EX. SAMPLE	POST-EX. SAMPLE PARAMETERS
408-2	2600	12	PHC, BN+, Pb
408-16	135	5	PHC, BN+
408-19	120	5	BN+
403-6&7	645	11	BN+, Pb
404-2	65	5	BN+, Cd, Pb
406-6	160	6	Pb

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Following the receipt of analytical results confirming the removal of contaminants to acceptable levels, all excavations will be backfilled using existing site materials. Following the backfilling of the excavations, a final report documenting the completion of all remedial activities and the final environmental condition of the site will be prepared. The report will include the following:

- o Description of all remedial activities;
- o Tabular summaries of post-excavation sample results;
- o Laboratory analytical reports;
- o All appropriate quality assurance/quality control documentation; and
- o A summary of the post-remedial environmental quality of the site.

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6.0 ESTIMATED REMEDIAL COSTS

1. TANK REMOVAL/ABANDONMENT

TANK REMOVAL

Backhoe/Operator, 5 days @ \$600/day	\$	3,000
Dump truck/Operator, 5 days @ \$450/day		2,250
Vac. truck/Operator, 5 days @ \$1000/day		5,000
Waste product disposal, 7000 gal @1.00/gal		7,000
Sampling/Supervision, 5 days @ \$500/day		2,500

TANK ABANDONMENT

Delivery of 20 yds. cement	1,200
----------------------------	-------

SAMPLE ANALYSIS

100-150 PHC @ \$75	7,500 - 11,250
25-40 BN+ @ \$400	10,000 - 16,000
25-40 VO+ @ \$325	8,125 - 13,000

SUBTOTAL

\$44,375-64,000

2. CONTAMINATED SOIL EXCAVATION+STOCKPILING

EXCAVATION/SAMPLING

Excavator/Operator-5 days @\$1000	\$	5,000
Backhoe/Operator-5 days @\$600		3,000
2 Dump trucks/Operator-5 days @\$450/ea.		4,500
Dozer/Operator-3 days @\$750		2,250
Sampling/Supervision-5 days @\$800		4,000
Equipment/Supplies-5 days @\$200		1,000
Sample Analysis		
17 PHC @\$70		1,190
38 BN+ @\$400		15,200
34 Pb @\$40		1,360
5 Cd @\$40		200
5 Waste Characterization @\$1400		7,000

BACKFILLING

Backhoe/Operator-2 days @\$600	\$	1,200
Dump truck/Operator-2 days w@\$450		900
Dozer/Operator-2 days @\$750		1,500

SUBTOTAL

\$ 48,300

KHOV005879

ASSESSMENT REPORT

August 1992

Page 17

3. WASTE SOIL DISPOSAL *

Tanks - 1,000 tons

Contaminated Soil Areas - 3725 tons

4725 tons @\$40-75/ton **

189,000 - 354,375

* We assume the K. Hovnanian will choose to contract directly with a disposal firm for disposal of this material

** low cost scenario assumes material can be used as landfill cover locally

4. PROFESSIONAL SERVICES

Project Management

Data Analysis

Report Preparation

\$ 6,000

6,000

8,000

SUBTOTAL

\$ 20,000

ESTIMATED PROJECT TOTAL \$301,675 - 486,675

KHOV005880

7.0 QUALITY ASSURANCE/QUALITY CONTROL

Throughout this investigation, strict measures were taken to assure the validity of all analytical data and the investigation findings. All samples were collected in accordance with JMS standard sampling procedures which have been approved by NJDEPE for numerous similar investigations. These procedures are outlined in Appendix C.

All analyses were performed by Envirotech Research, Inc. of Edison, New Jersey (NJDEPE certified laboratory No. 12543). A summary of analytical methodologies is provided in Appendix C. Complete laboratory quality assurance/quality control (QA/QC) documentation will be kept on file for review as necessary.

KHOV005881

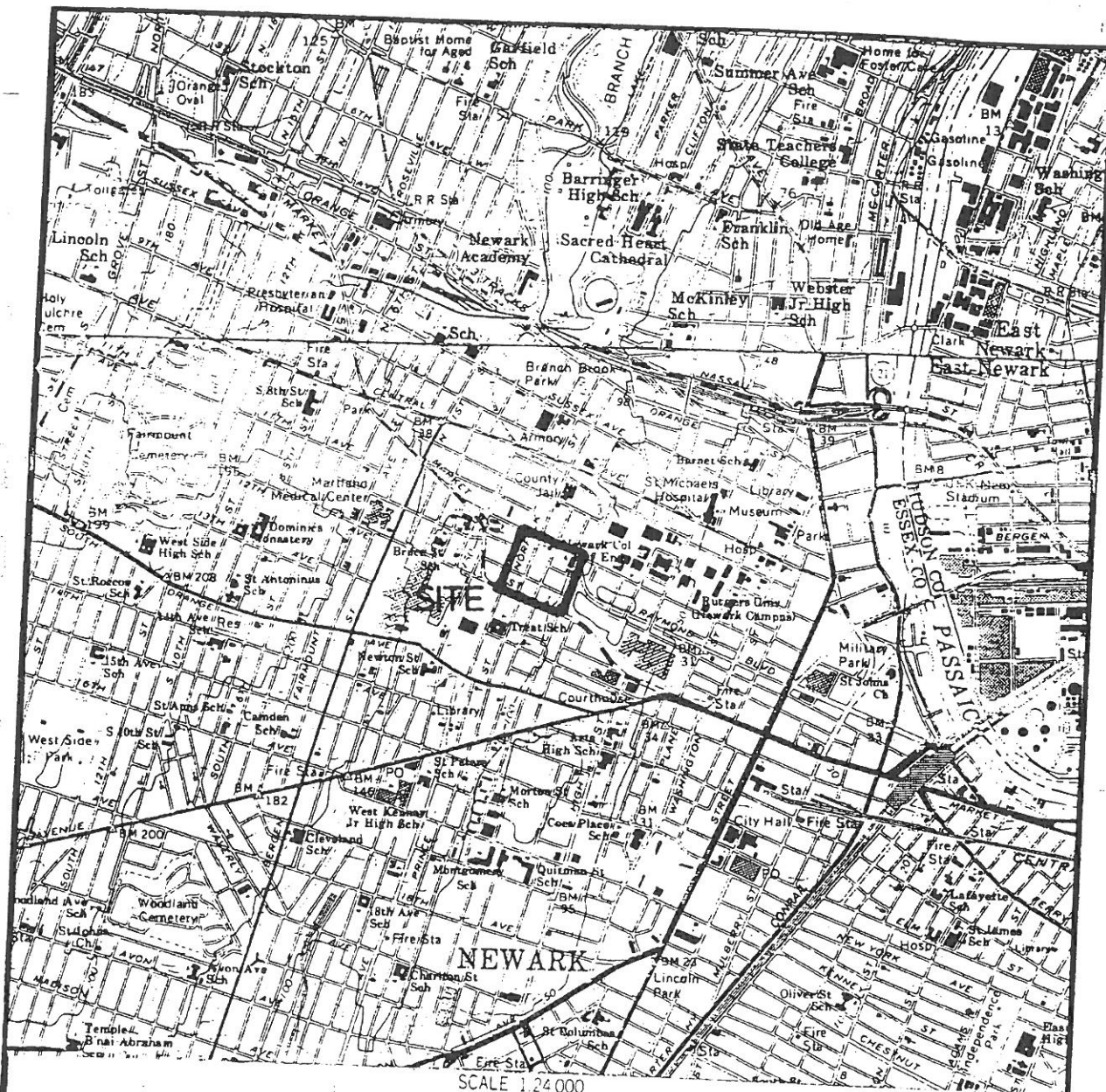
8.0 CONCLUSION

As a result of this investigation, a number of areas of environmental concern have been identified on this site. The areas of concern include improperly abandoned underground storage tanks, as well as areas of contaminated soil not associated with tanks. No hazardous waste conditions have been identified. However, the tanks and the contaminated soil areas represent environmental liabilities which must be addressed.

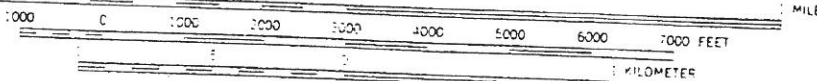
Based on the findings of this investigation, a remedial action plan has been developed. The plan calls for the removal and/or proper abandonment-in-place of all of the tanks and the excavation of any contaminated soil associated with them. The Plan also provides for the removal of the contaminated soil areas which are not related to the tanks. All soil removal activities will be followed by the collection and analysis of post-excavation samples to confirm the complete removal of contaminants to appropriate cleanup standards.

The goal of the proposed remedial action is to remove all soils containing contaminants at concentrations meeting or exceeding the most stringent NJDEPE proposed cleanup standards for residential sites. Implementation of the remedial action will bring all known areas of contamination into compliance with the applicable standards and render the site acceptable for residential development.

KHOV005882



SCALE 1:24,000



SOURCE:

U.S.G.S. 7.5
MINUTE SERIES
ELIZABETH &
ORANGE
QUADRANGLE - NJ

CONTOUR INTERVAL 10 FEET

JM SORGE, INC.

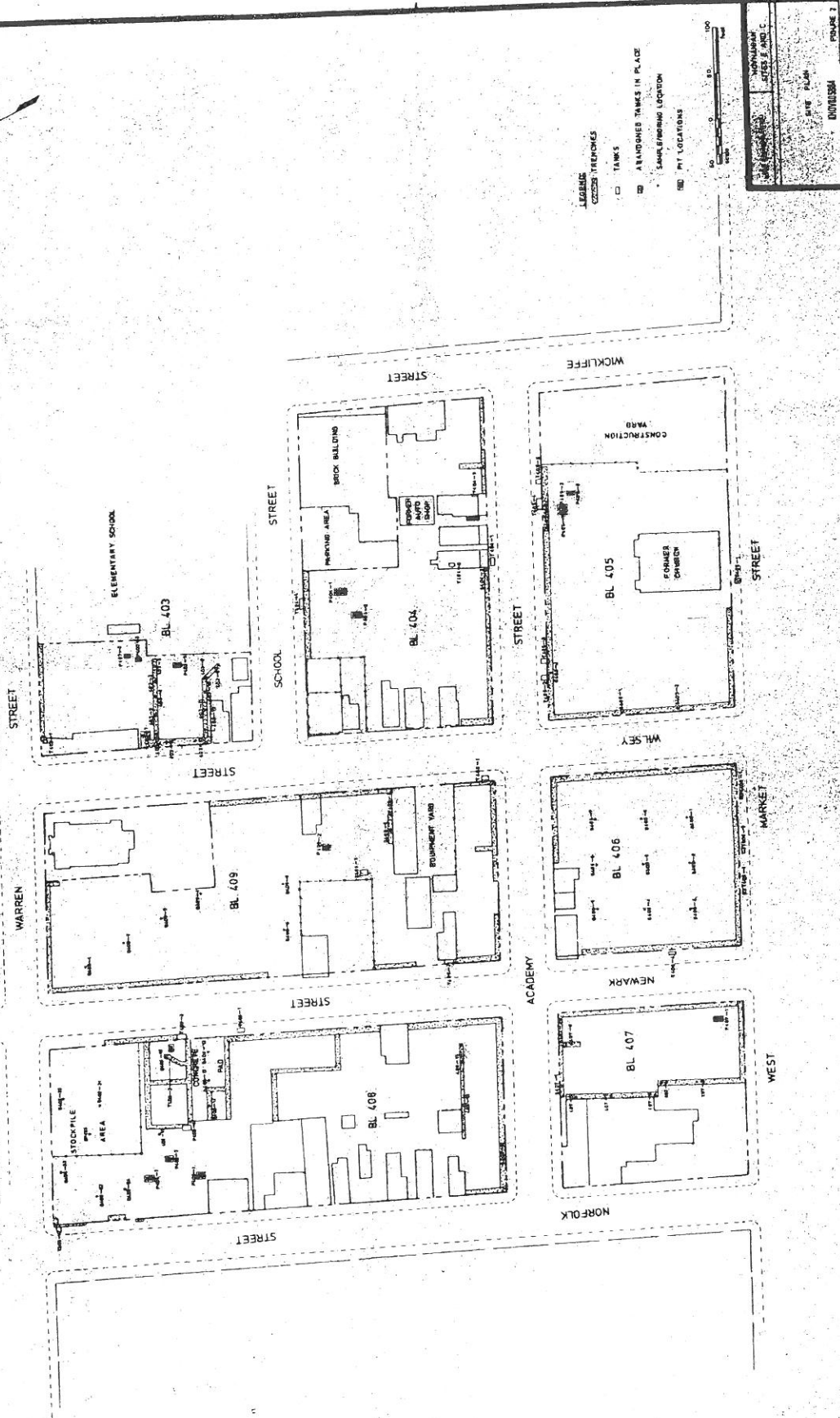
HOVNANIAN SITES C & E

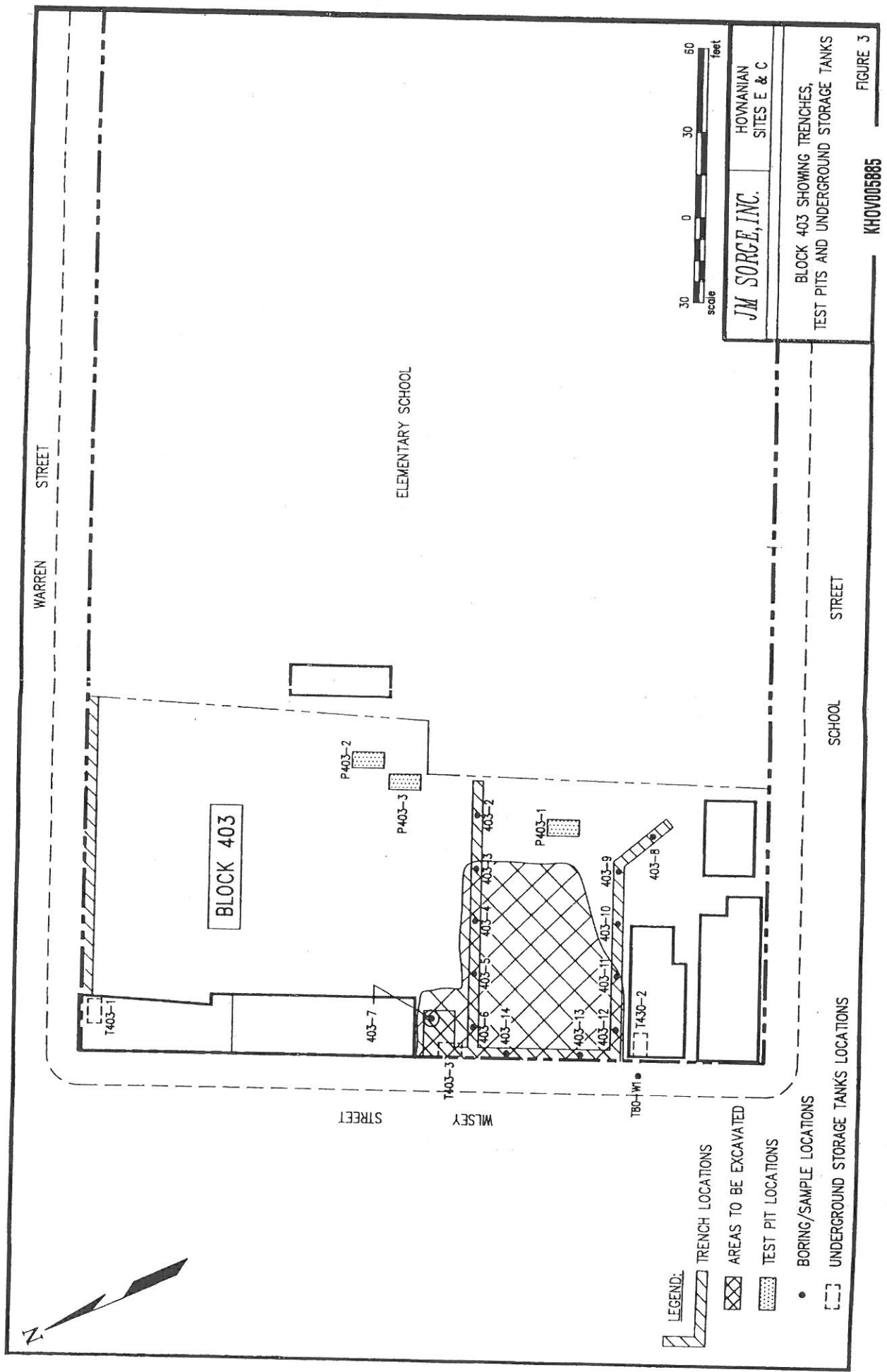
KHOV005883

SITE LOCATION MAP

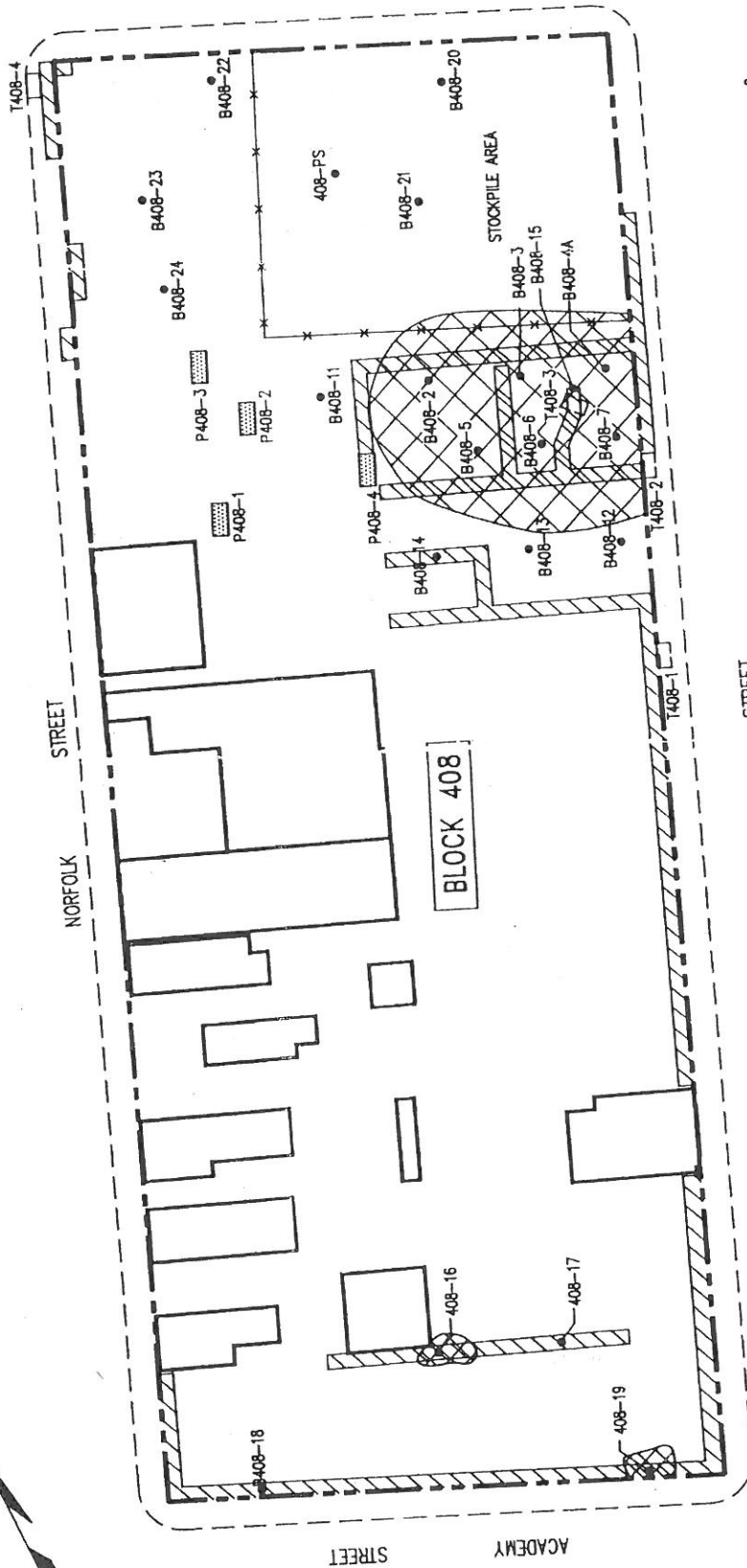
FIGURE 1

UTM GRID AND 1981 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET





<i>JM SORCE, INC.</i>	HOVNANIAN SITES E & C
BLOCK 403 SHOWING TRENCHES, TEST PITS AND UNDERGROUND STORAGE TANKS	
KH0V005885	
FIGURE 3	



LEGEND:

TRENCH LOCATIONS

- AREAS TO BE EXCAVATED
- TEST PIT LOCATIONS
- BORING/SAMPLE LOCATIONS
- UNDERGROUND STORAGE TANKS LOCATIONS



JM SORGE, INC.
HOVNANIAN
SITES E & C

BLOCK 408 SHOWING TRENCHES,
TEST PITS AND UNDERGROUND STORAGE TANKS

FIGURE 4

KH01005886

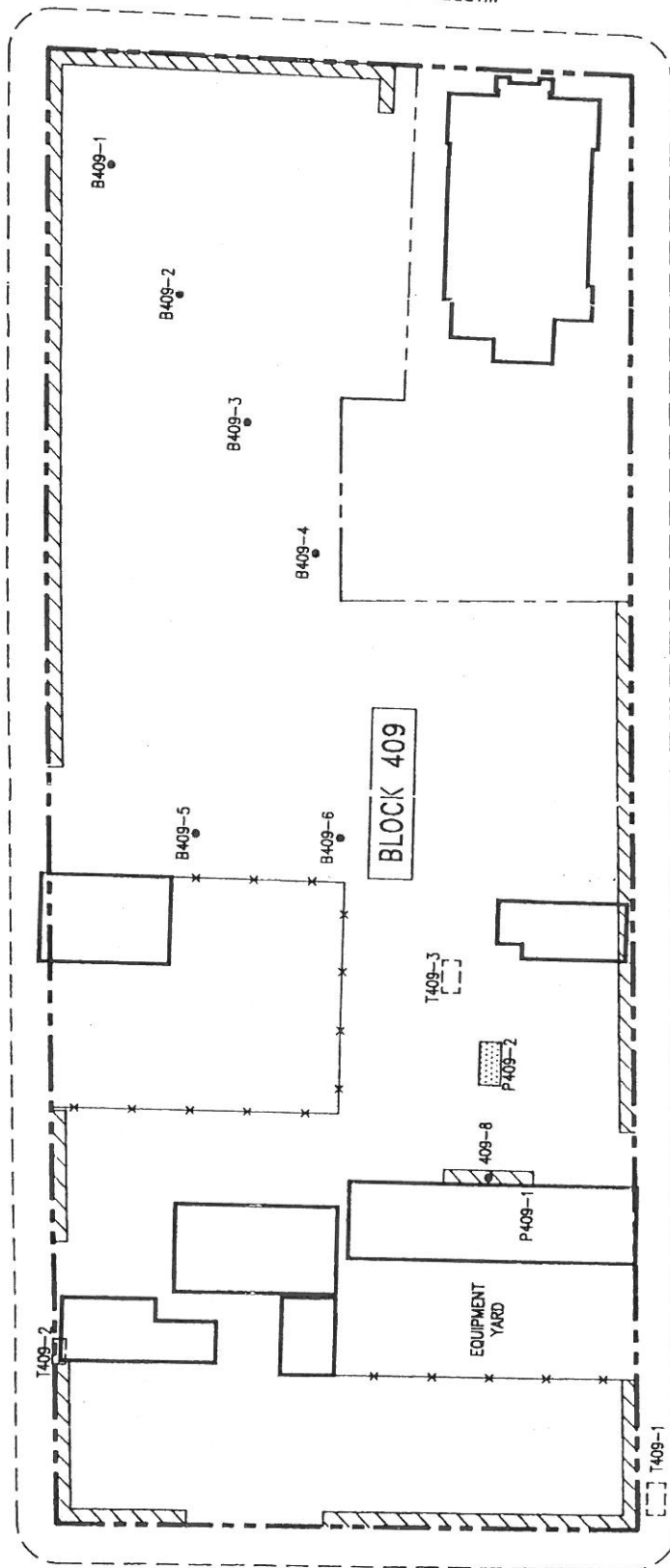


NEWARK STREET

ACADEMY STREET

WARREN STREET

WILSEY STREET



LEGEND:

TRENCH LOCATIONS

TEST PIT LOCATIONS

BORING/SAMPLE LOCATIONS

UNDERGROUND STORAGE TANKS LOCATIONS

JM SORGE, INC.

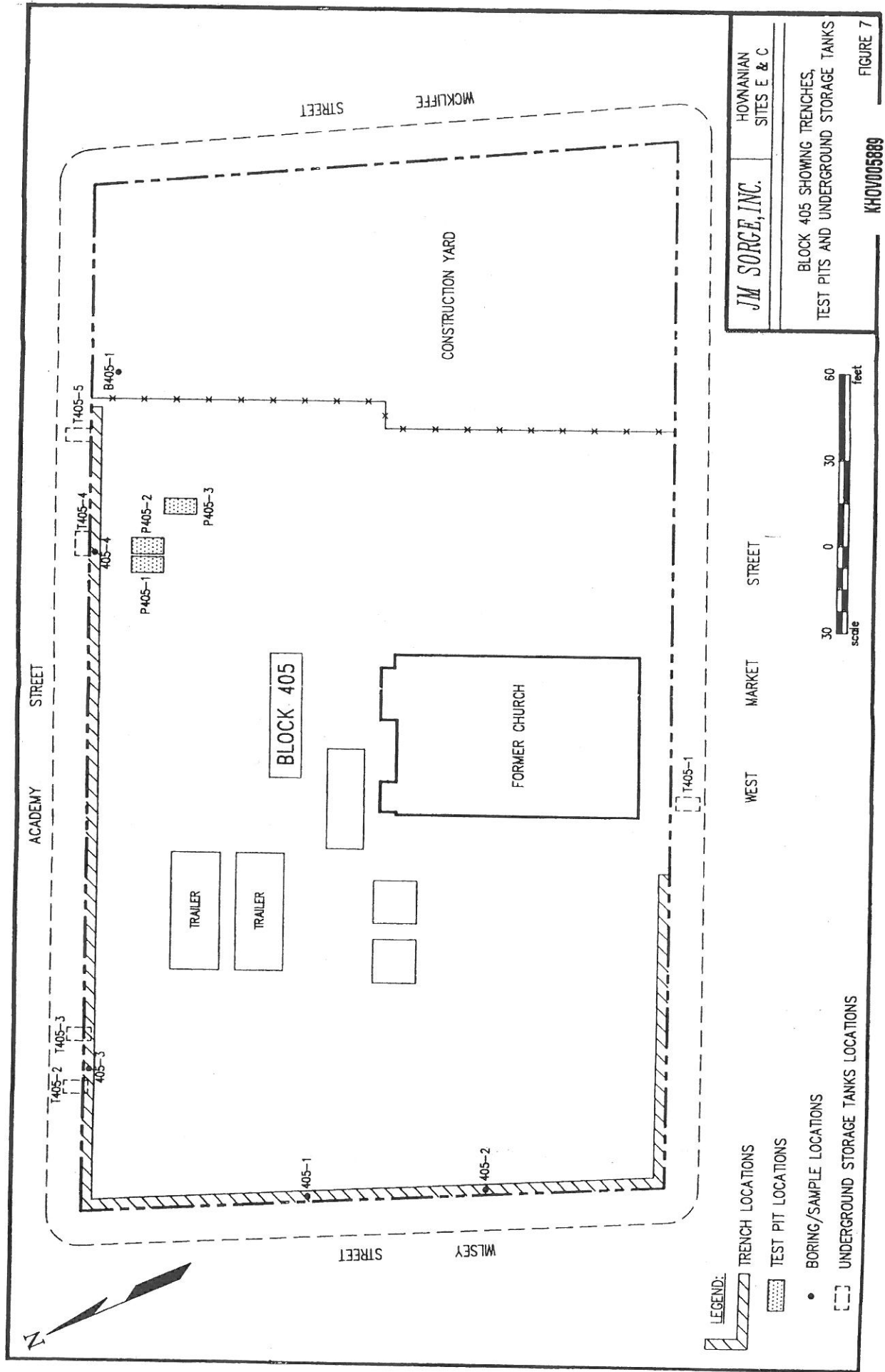
HOVNANIAN
SITES E & C

BLOCK 409 SHOWING TRENCHES,
TEST PITS AND UNDERGROUND STORAGE TANKS

FIGURE 5

KHOV005887





- LEGEND:
- TRENCH LOCATIONS
 - TEST PIT LOCATIONS
 - BORING/SAMPLE LOCATIONS
 - UNDERGROUND STORAGE TANKS LOCATIONS

JM SORGE, INC. HOVANIAN SITES E & C

BLOCK 405 SHOWING TRENCHES, TEST PITS AND UNDERGROUND STORAGE TANKS

KHOV005889

FIGURE 7

ACADEMY STREET

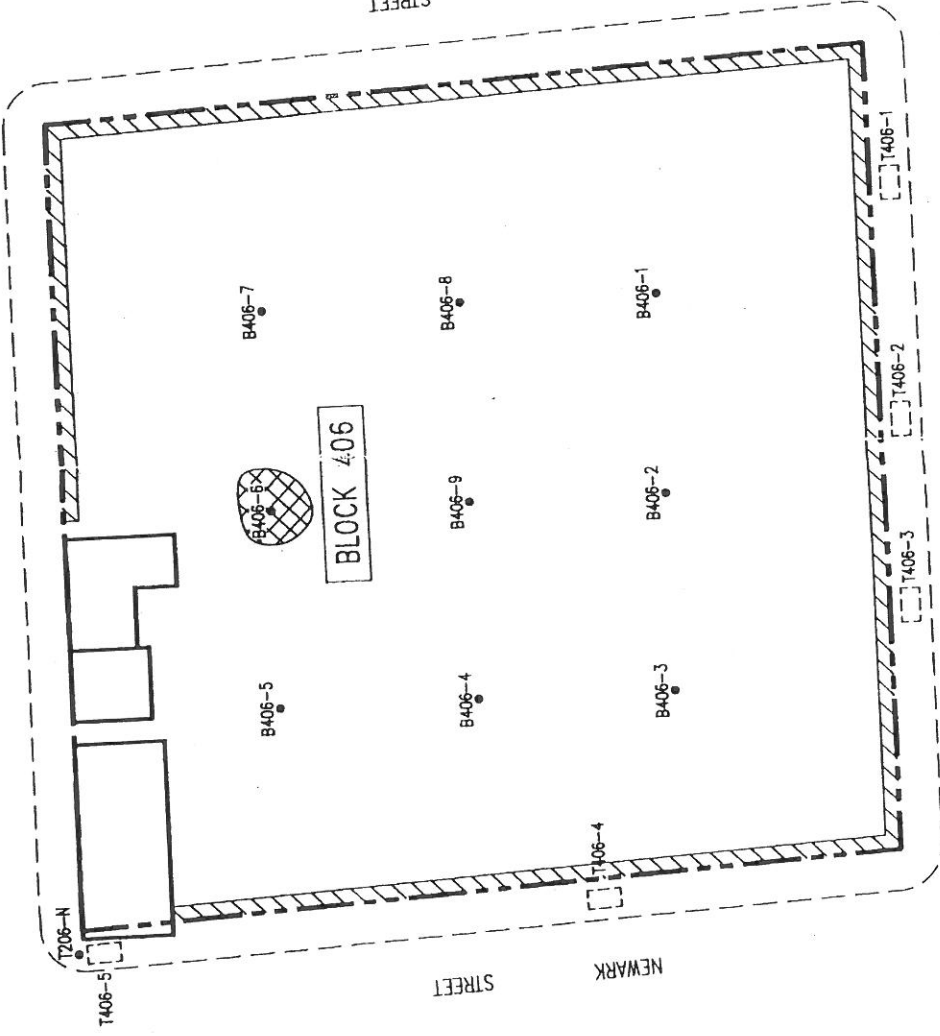
WILSEY STREET

NEWARK STREET

WEST MARKET STREET

JM SORCE, INC. HOVNANIAN SITES E & C
BLOCK 406 SHOWING TRENCHES, TEST PITS AND UNDERGROUND STORAGE TANKS

FIGURE 8
KH0V005890



- LEGEND:
- TRENCH LOCATIONS
 - AREAS TO BE EXCAVATED
 - TEST PIT LOCATIONS
 - BORING/SAMPLE LOCATIONS
 - UNDERGROUND STORAGE TANKS LOCATIONS



HOVNANIAN
TABLE 1
NJDEPE PROPOSED SOIL CLEANUP
STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL
VOLATILE ORGANICS	50
ACETONE	NA
ACROLEIN	1
ACRYLONITRILE	1
BENZENE	1
BROMOFORM	NA
BROMODICHLOROMETHANE	1
BROMOMETHANE	50
2-BUTANONE	1
CARBON TETRACHLORIDE	1
CHLOROBENZENE	NA
2-CHLOROETHYL VINYL ETHER	1
CHLOROFORM	10
CHLOROMETHANE	1
DIBROMOCHLOROMETHANE	NA
1,2-DICHLOROBENZENE	1
DICHLOROBROMOMETHANE	1
1,1-DICHLOROETHANE	1
1,2-DICHLOROETHANE	NA
DICHLOROETHYL ETHER	10
1,1-DICHLOROETHYLENE	50
1,2-DICHLOROETHYLENE	NA
1,2-DICHLOROPROPANE	1
1,3-DICHLOROPROPENE	100
ETHYLBENZENE	50
4-METHYL-2-PENTANONE	10
METHYLENE CHLORIDE	23
STYRENE	1
1,1,1,2-TETRACHLOROETHANE	1
1,1,2,2-TETRACHLOROETHANE	1
TETRACHLOROETHYLENE	500.000
TOLUENE	

KHOV005892

HOVNANIAN
TABLE 1
NJDEPE PROPOSED SOIL CLEANUP
STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL
1,1,1-TRICHLOROETHANE	50.000
1,1,2-TRICHLOROETHANE	1
TRICHLOROETHYLENE	1.000
TRICHLOROFUOROMETHANE	NA
VINYL CHLORIDE	1
XYLENES (TOTAL)	10
<hr/> BASE NEUTRALS	
CaPAH COMPOUNDS	
BENZO(A) ANTHRACENE	0.66
BENZO(A) PYRENE	0.66
BENZO(B) FLUORANTHENE	0.66
BENZO(K) FLUORANTHENE	0.66
CHRYSENE	0.66
DIBENZO(A,H) ANTHRACENE	0.66
INDENO(1,2,3-C,D)PYRENE	0.66
NON-CaPAH COMPOUNDS	
ACENAPHTHENE	100
ANTHRACENE	500
BENZIDENE	NA
BENZO(GHI) PERYLENE	0.66
BIS(2-CHLOROETHYL) ETHER	1
BIS(2-CHLOROISOPROPYL) ETHER	10
BIS(2-ETHYLHEXYL) PHTHALATE	49
BUTYL BENZYL PHTHALATE	100
DI-N-BUTYL PHTHALATE	100
DI-N-OCTYL PHTHALATE	100
1,2-DICHLOROBENZENE	50
1,3-DICHLOROBENZENE	100
1,4-DICHLOROBENZENE	100
3,3'-DICHLOROBENZIDENE	2

KHOV005893

HOVNANIAN
TABLE 1
NJDEPE PROPOSED SOIL CLEANUP
STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL
DIETHYL PHTHALATE	50
DIMETHYL PHTHALATE	50
2,4-DINITROTOLUENE	1
2,6-DINITROTOLUENE	NA
FLUORANTHENE	500
FLUORENE	100
HEXACHLOROBUTADIENE	50
HEXACHLOROBENZENE	0.42
HEXACHLOROCYCLOPENTADIENE	100
HEXACHLOROETHANE	100
ISOPHORONE	10
MIREX	NA
NAPHTHALENE	100
N-NITROSODIPHENYLAMINE	100
N-NITROSODIMETHYLAMINE	NA
N-NITROSODI-N-PROPYLAMINE	0.66
NITROBENZENE	1
PHENANTHRENE	NA
PYRENE	500
1,2,4-TRICHLOROBENZENE	100
ACID EXTRACTABLE COMPOUNDS	50
2-CHOROPHENOL	100
4-CHLORO-3-METHYL PHENOL	10
2,4-DICHLOROPHENOL	10
2,4-DINITROPHENOL	NA
DINOSEB	100
PENTACHLOROPHENOL	50
PHENOL	50
2,4,5-TRICHLOROPHENOL	50
2,4,6-TRICHLOROPHENOL	50

KHOV005894

HOVNANIAN
TABLE 1
NJDEPE PROPOSED SOIL CLEANUP
STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL
<hr/> PRIORITY METALS <hr/>	
ANTIMONY	14
ARSENIC	20
BARIUM	600
BERYLLIUM	2
CADMIUM	1
CHROMIUM	NA
COPPER	600
LEAD	100
MERCURY	14
NICKEL	250
SELENIUM	1
SILVER	40
THALLIUM	2
VANADIUM	380
ZINC	1500
<hr/>	
PETROLEUM HYDROCARBONS	10000
<hr/>	
POLYCHLORINATED BIPHENYLS	0.45
<hr/>	
PESTICIDES <hr/>	
ALDRIN	0.04
CARBOFURAN	NA
CHLORDANE	NA
DEMETRON	NA
DIELDRIN	0.042
4,4'-DDE	2
4,4'-DDT	2
4,4'-DDD	3
ENDOSULFAN	3
alpha-ENDOSULFAN	NA

KHOV005895

HOVNANIAN
TABLE 1
NJDEPE PROPOSED SOIL CLEANUP
STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL
beta-ENDOSULFAN	NA
ENDOSULFAN SULFATE	NA
ENDRIN	17
HEPTACHLOR	0.15
HEPTACHLOR EPOXIDE	NA
LINDANE	0.52
MALATHION	NA
METHOXYCHLOR	280
TOXAPHENE	0.62
HERBICIDES	NA
ATRAZINE	NA
2,2-DICHLOROPROPIONIC ACID	NA
2,4-D	NA
DIQUAT	NA
ENDOTHALL	NA
2,4,5-TP	NA
TCDD	NA
OTHER	NA
ACRYLAMIDE	NA
ALACHLOR	NA
ASBESTOS	50
BENZYL ALCOHOL	NA
alpha-BHC	NA
beta-BHC	NA
gamma-BHC	NA
CHLOROPYRIFOS	280
CYANIDE	NA
DI-N-PROPYLNITROSAMINE	NA
1,2-DIPHENYLHYDRAZINE	NA
EPICHLOROHYDRIN	NA

KHOV005896

HOVNANIAN
TABLE 1
NJDEPE PROPOSED SOIL CLEANUP
STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL
ETHYTHLENE DIBROMIDE	NA
FLUORIDE	1100
HYDROGEN SULFIDE	NA
MIREX	NA
OXAMYL	NA

NOTES: NA - no new standard available

KHOV005897

HOVNANIAN
TABLE 2

NOTES :

- pps - parts per million
- pbp - parts per billion
- ppb - parts per billion
- W - not detected
- NA - not analysed
- J - compound found at less than method detection limit
- X - compound also found in lab. blank

TTS -
 PPA - parts per million
 PPB - parts per billion
 ND - not detected
 NA - not analyzed
 J - compound found at
 S - compound also found

KHOV005898

TABLE 2 (cont.)
SAMPLE RESULTS SUMMARY
SITE C - BLOCK 403

Sample No.	403-8	403-9	403-10	403-11	403-12	403-13	403-14
Area of Concern	Block 403	Block 403	Block 403	Block 403	Block 403	Block 403	Block 403
Sample Depth	2.5-3.0	2.5-3.0	3.3-4.0	3.3-4.0	3.3-4.0	3.0-3.5	2.5-3.0
Date Sampled	07/07/92	07/07/92	07/07/92	07/07/92	07/07/92	07/07/92	07/07/92
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE							
1,1,1-TRICHLOROETHANE							
IDENTIFIED PEAKS							
UNKNOWN PEAKS							
BASE NEUTRALS (ppb)	NA	NA	NA	NA	NA	NA	NA
CAPAS COMPOUNDS							
BENZO(A) PYRENE				120 J			
BENZO(B) FLUORANTHENE				110 J			
BENZO(K) FLUORANTHENE				94 J			
CHRYSENE				140 J			
DIBENZO(A,B) ANTHRACENE				19 J			
INDENO(1,2,3-C,D)PYRENE				100 J			
NON-CAPAS COMPOUNDS							
ANTHRACENE				36 J			
BENZO(GH,I) PERYLENE				94 J			
BIS(2-ETHYLHEXYL) PHTHALATE				ND			
FLUORANTHENE				220 J			
PHENANTHRENE				130 J			
PYRENE				200 J			
IDENTIFIED PEAKS				ND			
UNKNOWN PEAKS				1660			
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	NA	NA	NA
PRIORITY METALS (ppm)	NA	NA	NA	NA	NA	NA	NA
ARSENIC							
CADMIUM							
COPPER							
LEAD							
MERCURY							
NICKEL							
IRON							
CYANIDE							
PHENOLS							
PETROLEUM HYDROCARBONS (ppm)	110	ND	120	5110	36	ND	ND
PESTICIDES/PCBs (ppb)	NA	NA	NA	NA	NA	NA	NA

NOTES:

- ppm - parts per million
 ppb - parts per billion
 ND - not detected
 NA - not analysed
 J - compound found at less than 100 ppb
 B - compound also found in lab

KH0V005899

BOVNANIAN
TABLE 3
SAMPLE RESULTS SUMMARY
SITE C - BLOCK 408

Sample No.	408-P5	408-11A	408-11B	408-12A	408-12B
Area of Concern	Block 408	Block 408	Block 408	Block 408	Block 408
Sample Depth	3.0-3.5	2.0-2.5	5.0-5.5	2.0-2.5	5.0-5.5
Date Sampled	07/10/92	06/24/92	06/24/92	06/24/92	06/24/92
VOLATILE ORGANICS (ppb)		NA	NA	NA	NA
METHYLENE CHLORIDE	1.4 JB				
1,1,1 TRICHLOROETHANE	26 B				
IDENTIFIED PEAKS	ND				
UNKNOWN PEAKS	ND				
BASE NEUTRALS (ppb)		NA	NA	NA	NA
CaPAH COMPOUNDS					
BENZO(A) ANTHRACENE	830				
BENZO(A) PYRENE	850				
BENZO(B) FLUORANTHENE	930				
BENZO(K) FLUORANTHENE	760				
CHRYSENE	1000				
DIBENZO(A,H) ANTHRACENE	240 J				
INDENO(1,2,3-C,D)PYRENE	780				
NON-CaPAH COMPOUNDS					
ACENAPHTHENE	31 J				
ACENAPHTYLENE	60 J				
ANTHRACENE	140 J				
BENZO(GHI) PERYLENE	710				
BIS(2-ETHYLHEXYL) PHTHALATE	110 J				
DIBUTYL PHTHALATE	97 J				
FLUORANTHENE	1400				
FLUORENE	38 J				
NAPHTHALENE	27 J				
PHENANTHRENE	720				
PYRENE	1800				
IDENTIFIED PEAKS	5130				
UNKNOWN PEAKS	5140				
ACID EXTRACTABLE COMPOUNDS (ppb)	ND	NA	NA	NA	NA
PRIORITY METALS (ppm)		NA	NA	NA	NA
ARSENIC	5.48				
CHROMIUM	20.9				
COPPER	33.7				
LEAD	1200				
MERCURY	1.39				
NICKEL	19				
ZINC	451				
CYANIDE	ND				
PHENOL	ND				
PETROLEUM HYDROCARBONS (ppm)	ND	ND	50	ND	170
PESTICIDES/PCBs (ppb)		NA	NA	NA	NA
4,4'-DDE	41				
4,4'-DDT	420				

NOTES :

- ppm - parts per million
- ppb - parts per billion
- NA - not analyzed
- ND - not detected
- J - compound found at less than method detection lim it
- B - compound also found in la b. blank

KHOV005900

HOVNANIAN
TABLE 3 (cont.)
SAMPLE RESULTS SUMMARY
SITE C - BLOCK 408

Sample No.	408-13A	408-13B	408-14A	408-14B	408-15
Area of Concern	Block 408	Block 408	Block 408	Block 408	Block 408
Sample Depth	2.0-2.5	5.0-5.5	2.0-2.5	5.0-5.5	9.0-9.5
Date Sampled	06/24/92	06/24/92	06/24/92	06/24/92	07/02/92
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	
METHYLENE CHLORIDE					6.8 JB
1,1,1 TRICHLOROETHANE					ND
IDENTIFIED PEAKS					1064
UNKNOWN PEAKS					743
BASE NEUTRALS (ppb)	NA	NA	NA	NA	
CaPAH COMPOUNDS					
BENZO(A) ANTHRACENE					630 J
BENZO(A) PYRENE					560 J
BENZO(B) FLUORANTHENE					570 J
BENZO(K) FLUORANTHENE					480 J
CHRYSENE					850 J
DIBENZO(A,H) ANTHRACENE					85 J
INDENO(1,2,3-C,D) PYRENE					400 J
NON-CaPAH COMPOUNDS					
ACENAPHTHENE					180 J
ACENAPHTYLENE					80 J
ANTHRACENE					240 J
BENZO(GHI) PERYLENE					400 J
BIS(2-ETHYLHEXYL) PHTHALATE					ND
DIBUTYL PHTHALATE					ND
FLUORANTHENE					1600 J
FLUORENE					190 J
NAPHTHALENE					74 J
PHENANTHRENE					1100 J
PYRENE					1600 J
IDENTIFIED PEAKS					5700
UNKNOWN PEAKS					27900
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	NA
PRIORITY METALS (ppm)	NA	NA	NA	NA	NA
ARSENIC					
CHROMIUM					
COPPER					
LEAD					
MERCURY					
NICKEL					
ZINC					
CYANIDE					
PHENOL					
PETROLEUM HYDROCARBONS (ppm)	ND	ND	ND	ND	1680
PESTICIDES/PCBs (ppb)	NA	NA	NA	NA	NA
4,4'-DDE					
4,4'-DDT					

NOTES :

ppm - parts per million
ppb - parts per billion
NA - not analyzed
ND - not detected
J - compound found at less
than method detection lim
B - compound also found in 1a

KHOV005901

HOVNANIAN
TABLE 3 (cont.)
SAMPLE RESULTS SUMMARY
SITE C - BLOCK 408

Sample No.	408-16	B408-2	B408-3	B408-4A	B408-6
Area of Concern	Block 408	Block 408	Block 408	Block 408	Block 408
Sample Depth	5.0-5.5	6.0-6.5	3.0-3.5	6.0-6.5	3.0-3.5
Date Sampled	07/06/92	08/14/89	08/14/89	08/14/89	08/16/89
VOLATILE ORGANICS (ppb)					
	ND	NA	8	JB	6.7
CHLOROFORM	ND		ND		49
ETHYLBENZENE	ND		ND		ND
METHYLENE CHLORIDE	17 JB		6	J	14 J
TETRACHLOROETHYLENE	ND		13	J	11 J
1,1,1 TRICHLOROETHANE	ND		ND		13 J
TOLUENE	ND		ND		435
XYLENES					
IDENTIFIED PEAKS	2520		52		17770
UNKNOWN PEAKS	960		ND		12990
BASE NEUTRALS (ppb)					
		NA	NA	NA	
CaPAH COMPOUNDS					5100 J
BENZO(A) ANTHRACENE	ND				3230
BENZO(A) PYRENE	ND				5780
BENZO(B) FLUORANTHENE	1000 J				ND
BENZO(K) FLUORANTHENE	ND				9370
CHRYSENE	ND				530 J
DIBENZO(A,H) ANTHRACENE	ND				1800
INDENO(1,2,3-C,D)PYRENE	ND				
NON-CaPAH COMPOUNDS					1000 J
ACENAPHTHENE	ND				ND
ACENAPHTYLENE	ND				1800
ANTHRACENE	ND				1400 J
BENZO(GHI) PERYLENE	ND				2840 B
BIS(2-ETHYLHEXYL) PHTHALATE	ND				ND
DIBUTYL PHTHALATE	ND				9020
FLUORANTHENE	ND				1800
FLUORENE	ND				1500 J
NAPHTHALENE	ND				7650
PHENANTHRENE	ND				11400
PYRENE					
IDENTIFIED PEAKS	ND				315000
UNKNOWN PEAKS	90000				238000
ACID EXTRACTABLE COMPOUNDS (ppb)					
	NA	NA	NA	NA	ND
PRIORITY METALS (ppm)					
	NA	NA	NA	NA	8.6
ARSENIC					16
CHROMIUM					65.2
COPPER					230
LEAD					0.8
MERCURY					226
ZINC					
CYANIDE					ND
PHENOLS					33
PETROLEUM HYDROCARBONS (ppm)	29300	10500	6490	5130	6280
PESTICIDES/PCBs (ppb)	NA	NA	NA	NA	200
PCB-1254					

NOTES :

- ppm - parts per million
- ppb - parts per billion
- ND - not detected
- NA - not analyzed
- J - compound found at less than method detection limit
- B - compound also found in lab. blank

KHOV005902

BOVNANIAN

TABLE 3 (cont.)

SAMPLE RESULTS SUMMARY

SITE C - BLOCK 408

Sample No.	B408-7	B408-16	B408-17	B408-18	B408-19
Area of Concern	Block 408	Block 408	Block 408	Block 408	Block 408
Sample Depth	3.0-3.5	3.5-4.0	3.5-4.0	3.5-4.0	4.5-5.0
Date Sampled	08/16/89	07/09/92	07/09/92	07/09/92	07/10/92
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	
CHLOROFORM					ND
ETHYLBENZENE					ND
METHYLENE CHLORIDE					5.8 B
TETRACHLOROETHYLENE					ND
1,1,1 TRICHLOROETHANE					36 B
TOLUENE					ND
XYLENES					ND
IDENTIFIED PEAKS					52
UNKNOWN PEAKS					43
BASE NEUTRALS (ppb)	NA	NA	NA	NA	
CaPAH COMPOUNDS					
BENZO(A) ANTHRACENE					5800 J
BENZO(A) PYRENE					1400 J
BENZO(B) FLUORANTHENE					4800 J
BENZO(K) FLUORANTHENE					4700 J
CHRYSENE					7600 J
DIBENZO(A,H) ANTHRACENE					510 J
INDENO(1,2,3-C,D) PYRENE					1900 J
NON-CaPAH COMPOUNDS					
ACENAPHTHENE					1600 J
ACENAPHTHYLENE					ND
ANTHRACENE					2200 J
BENZO(GHI) PERYLENE					1700 J
BIS(2-ETHYLHEXYL) PHTHALATE					ND
DIBUTYL PHTHALATE					ND
FLUORANTHENE					17000
FLUORENE					1300 J
NAPHTHALENE					1100 J
PHENANTHRENE					15000
PYRENE					14000
IDENTIFIED PEAKS					8000
UNKNOWN PEAKS					4000
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	NA
PRIORITY METALS (ppm)	NA	NA	NA	NA	NA
ARSENIC					
CHROMIUM					
COPPER					
LEAD					
MERCURY					
ZINC					
CYANIDE					
PHENOLS					
PETROLEUM HYDROCARBONS (ppm)	9280	60	30	ND	1690
PESTICIDES/PCBs (ppb)	ND	NA	NA	NA	NA
PCB-1254					

NOTES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

J - compound found at less

than method detection limit

B - compound also found in lab

KH0V005903

BOVNANIAN
TABLE 3 (cont.)
SAMPLE RESULTS SUMMARY
SITE C - BLOCK 408

Sample No.	B408-20	B408-21	B408-22	B408-23	B408-24
Area of Concern	Block 408	Block 408	Block 408	Block 408	Block 408
Sample Depth	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.0
Date Sampled	07/10/92	07/10/92	07/10/92	07/10/92	07/10/92
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	NA
CHLOROPFORM					
ETHYLBENZENE					
METHYLENE CHLORIDE					
TETRACHLOROETHYLENE					
1,1,1 TRICHLOROETHANE					
TOLUENE					
XYLENES					
IDENTIFIED PEAKS					
UNKNOWN PEAKS					
BASE NEUTRALS (ppb)	NA	NA	NA	NA	NA
CaPAH COMPOUNDS					
BENZO(A) ANTHRACENE					
BENZO(A) PYRENE					
BENZO(B) FLUORANTHENE					
BENZO(K) FLUORANTHENE					
CHRYSENE					
DIBENZO(A,H) ANTHRACENE					
INDENO(1,2,3-C,D)PYRENE					
NON-CaPAH COMPOUNDS					
ACENAPHTHENE					
ACENAPHTYLENE					
ANTHRACENE					
BENZO(GHI) PERYLENE					
BIS(2-ETHYLHEXYL) PHTHALATE					
DIBUTYL PHTHALATE					
FLUORANTHENE					
FLUORENE					
NAPHTHALENE					
PHENANTHRENE					
PYRENE					
IDENTIFIED PEAKS					
UNKNOWN PEAKS					
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	NA
PRIORITY METALS (ppm)	NA	NA	NA	NA	NA
ARSENIC					
CHROMIUM					
COPPER					
LEAD					
MERCURY					
ZINC					
CYANIDE					
PHENOLS					
PETROLEUM HYDROCARBONS (ppm)	ND	ND	26	ND	ND
PESTICIDES/PCBs (ppb)	NA	NA	NA	NA	NA
PCB-1254					

NOTES :

- ppm - parts per million
- ppb - parts per billion
- ND - not detected
- NA - not analyzed
- J - compound found at less than method detection limit
- B - compound also found in lab

KHOV005904

HOVNANIAN

TABLE 4

SAMPLE RESULTS SUMMARY

SITE C - BLOCK 409

Sample No.	B409-1	B409-2	B409-3	B409-4	B409-5	B409-6	B409-8
Area of Concern	Block 409	Block-409	Block-409	Block-409	Block-409	Block-409	Block-409
Sample Depth	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.0	10.5-11.0	2.5-3.0
Date Sampled	07/10/92	07/10/92	07/10/92	07/10/92	07/10/92	07/10/92	07/10/92
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	NA	NA	
METHYLENE CHLORIDE							ND
1,1,1-TRICHLOROETHANE							2.7 JB
IDENTIFIED PEAKS							ND
UNKNOWN PEAKS							ND
PETROLEUM HYDROCARBONS (ppm)	ND	ND	ND	ND	ND	ND	37

NOTES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

J - compound found at less

than method detection limit

B - compound also found in lab. blank

KH0V005905

HOVHANNIAN
TABLE 5
SAMPLE RESULTS SUMMARY
SITE Z - BLOCK 404

Sample No.	T-97W	T88-WIL	T88-WIL1	T259AC-1	B404-2	B404-3	B404-4	404-2
Area of Concern	Block 404	Block 404	Block 404	Block 404	Block 404	Block 404	Block 404	Block 404
Sample Depth	6.25-6.75	6.0-6.50	6.0-6.50	6.0-6.50	6.0-6.50	18.0-18.5	18.0-18.5	2.5-3.0
Date Sampled	08/14/89	08/18/89	08/18/89	08/15/89	08/17/89	08/18/89	08/18/89	06/25/92
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	8.9 JB	NA	NA	NA
CHLOROFORM					7.3 JB			
TETRACHLOROETHYLENE					8.2 JB			
1,1,1-TRICHLOROETHANE					ND			
IDENTIFIED PEAKS					ND			
UNKNOWN PEAKS						NA	NA	NA
BASE NEUTRALE (ppb)	NA	NA	NA	NA				
CAPAH COMPOUNDS					6470			
BENZO(A) ANTHRACENE					6140			
BENZO(A) PYRENE					11900			
BENZO(B) FLUORANTHENE					6820			
CHRYSENE					750 J			
DIBENZO(A,H) ANTHRACENE					2140			
INDENO(1,2,3-C,D) PYRENE								
NON-CAPAH COMPOUNDS					460 J			
ACENAPHTHENE					750 J			
ACENAPHTHYLENE					1900			
ANTHRACENE					19100			
BIS(2-ETHYLHEXYL) PHTHALATE					1600			
BENZO(GHI) PERYLENE					770 J			
BUTYL BENZYL PHTHALATE					12600			
FLUORANTHENE					540 J			
FLUORENE					200 J			
NAPHTHALENE					8110			
PREMANTHRENE					11400			
PYRENE								
IDENTIFIED PEAKS					47500			
UNKNOWN PEAKS					5280			
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	ND	NA	NA	NA
PRIORITY METALS (ppm)	NA	NA	NA	NA	4.7			
ARSENIC					2.1			
CADMIUM					21			
CHROMIUM					58.4			
COPPER					273			
LEAD					1.17			
MERCURY					59			
NICKEL					3.0			
SILVER					332			
ZINC					2.0			
CYANIDE					ND			
PHENOLS								
PETROLEUM HYDROCARBONS (ppm)	ND	36	85	42	1170	ND	ND	115
PESTICIDES/PCBs (ppb)	NA	NA	NA	NA	73	NA	NA	NA
4,4'-DDT					122			
DIELDRIN					18			
HEPTACHLOR								

NOTES :

- ppm - parts per million
- ppb - parts per billion
- ND - not detected
- NA - not analyzed
- J - compound found at less than method detection limit
- B - compound also found in lab. blank

KHOV005906

HOVNANIAN
TABLE 6
SAMPLE RESULTS SUMMARY
SITE E - BLOCK 405

Sample No.	405-1	405-2	405-3	405-4	B405-1
Area of Concern	Block 405	Block 405	Block 405	Block 405	Block 405
Sample Depth	2.5-3.0	2.5-3.0	2.5-3.0	2.5-3.0	15.5-16.0
Date Sampled	06/23/92	06/23/92	06/23/92	06/23/92	08/18/89
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	
CHLOROFORM					
1,1,1-TRICHLOROETHANE					8.9 JB
					6.4 JB
IDENTIFIED PEAKS					ND
UNKNOWN PEAKS					ND
BASE NEUTRALS (ppb)	NA	NA	NA		
CAPAH COMPOUNDS					
BENZO(A) ANTHRACENE					85 J
BENZO(A) PYRENE					93 J
BENZO(B) FLUORANTHENE					160 J
CHRYSENE				200 J	96 J
DIBENZO(A,H) ANTHRACENE					20 J
INDENO(1,2,3-C,D) PYRENE					63 J
NON-CAPAH COMPOUNDS					
ACENAPHTHYLENE					10 J
ANTHRACENE					20 J
BENZO(GHI) PERYLENE					55 J
BIS(2-ETHYLHEXYL) PHTHALATE					1800 J
FLUORANTHENE					190 J
FLUORENE				390 J	ND
NAPHTHALENE				6300 J	ND
PHENANTHRENE				3800 J	ND
PYRENE				9500	110 J
				1300 J	150 J
IDENTIFIED PEAKS				1039000	ND
UNKNOWN PEAKS				176000	ND
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	ND
PRIORITY METALS (ppm)	NA	NA	NA	NA	
CHROMIUM					28.9
COPPER					14
LEAD					39
NICKEL					22
ZINC					49.5
CYANIDE					ND
PHENOLS					ND
PETROLEUM HYDROCARBONS (ppm)	ND	ND	ND	4220	NA
PESTICIDES/PCBs (ppb)	NA	NA	NA	NA	ND

NOTES :

ppm - parts per million
ppb - parts per billion
ND - not detected
NA - not analyzed
J - compound found at less
than method detection limit

KHOV005907

HOVNANIAN

TABLE 7

SAMPLE RESULTS SUMMARY

SITE E - BLOCK 406

Sample No.	T143-1	T106N	B406-1	B406-2	B406-3	B406-4	B406-5	B406-6	B406-7	B406-8	B406-9
Area of Concern	Block 406	Block 406	Block 406	Block 406	Block 406	Block 406	Block 406	Block 406	Block 406	Block 406	Block 406
Sample Depth	6.0-6.5	6.5-7.0	5.5-6.0	10.0-10.5	6.0-6.5	10.5-11.0	9.0-9.5	7.0-7.5	5.5-6.0	10.0-10.5	10.5-11.0
Date Sampled	08/15/89	08/17/89	07/09/92	07/09/92	07/09/92	07/09/92	07/09/92	07/09/92	07/09/92	07/09/92	07/10/92
PRIORITY METALS (ppm)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC								2.4			ND
CHROMIUM								26.7			13.4
COPPER								58.3			22
LEAD								209			ND
MERCURY								1.40			ND
NICKEL								25			14
SELENIUM								0.78			ND
ZINC								134			32.4
PETROLEUM HYDROCARBONS (ppm)	ND	ND	ND	210	25	ND	ND	54	ND	ND	ND

NOTES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

KHOV005908

HOVNANIAN
TABLE 8
SAMPLE RESULTS SUMMARY
SITE E - BLOCK 407

Sample No.	407-1	407-2	407-4	407-5	407-6	407-7	407-8
Area of Concern	Block 407	Block-407	Block-407	Block-407	Block-407	Block-407	Block-407
Sample Depth	3.5-4.0	3.5-4.0	8.0-8.5	5.0-5.5	5.0-5.5	5.0-5.5	5.0-5.5
Date Sampled	07/02/92	07/02/92	07/03/92	07/03/92	07/03/92	07/03/92	07/03/92
VOLATILE ORGANICS (ppb)							
METHYLENE CHLORIDE	2.6 JB	1.9 JB	NA	NA	NA	NA	NA
BASE NEUTRALS (ppb)							
CAPAH COMPOUNDS			NA	NA	NA	NA	NA
BENZO(A) ANTHRACENE	12 J	ND					
BENZO(A) PYRENE	12 J	6.6 J					
BENZO(B) FLUORANTHENE	23 J	14 J					
CHRYSENE	14 J	9.8 J					
NON-CAPAH COMPOUNDS							
FLUORANTHENE	22 J	14 J					
PHENANTHRENE	ND	8.5 J					
PYRENE	21 J	13 J					
IDENTIFIED PEAKS	ND	ND					
UNKNOWN PEAKS	1330	ND					
ACID EXTRACTABLE COMPOUNDS (ppb)							
	ND	ND	NA	NA	NA	NA	NA
PRIORITY METALS (ppm)							
ARSENIC	1.1	1.2	NA	NA	NA	NA	NA
CHROMIUM	8.8	6.3					
COPPER	35.9	30.4					
LEAD	40	8.5					
NICKEL	8.7	6.5					
ZINC	50.9	31.2					
CYANIDE	ND	ND	NA	NA	NA	NA	NA
PHENOLS	ND	ND	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (ppm)							
	NA	NA	ND	ND	130	28	180
PESTICIDES/PCBs (ppb)							
	ND	ND	NA	NA	NA	NA	NA

NOTES :
ppm - parts per million
ppb - parts per billion
ND - not detected
NA - not analyzed
J - compound found at less than method detection limit
B - compound also found in lab. blank

KHOV005909

APPENDIX A

TEST PIT AND BORING LOGS

KHOV005910



JM Sorge, Inc.

BORING LOG

BORING NO. B408-1

SHEET 1 OF 1

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR J.M. SORGE INC		DRILLER S. GRASSO		SAMPLER B. KAISER			
DRILLING RIG TYPE SIMCO 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT		DATE STARTED 8.14.89			
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DATE COMPLETED 8.14.89			
		DROP		TOTAL DEPTH 6.5'			
				WATER LEVEL ENCOUNTERED <input checked="" type="checkbox"/> STABILIZED <input checked="" type="checkbox"/>			
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		BLACK SILTY LOAM	
				2		BLACK/GREY CLAY LOAM	
				3		BROWN CLAY LOAM MOIST	
	B408-1			4			
				5			
				6			
	B408-1A			7		COMPLETION OF BORING	
				8			
				9			
				10			

KHOV005912



JM Surge, Inc.

BORING LOG

BORING NO. B405-2SHEET 1 OF 1

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.		ELEVATION AND DATUM					
DRILLING CONTRACTOR J. M. SURGE INC.		DRILLER S. GRASSO		SAMPLER B. KAISER			
INSPECTOR B. KAISER		DRILLING RIG TYPE SIMCO 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT			
DATE STARTED 8-14-89		DATE COMPLETED 8-14-89		SAMPLER TYPE STAINLESS STEEL HAND AUGER			
HAMMER WEIGHT		DROP		TOTAL DEPTH 6.5'			
WATER LEVEL ENCOUNTERED		WATER LEVEL STABILIZED					
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		BLACK SILTY LOAM ASPHALT	
				2		RED/BROWN SANDY LOAM BRICK	
				3			
				4		RED/BROWN SANDY LOAM BRICK	
				5			
				6			
				7		COMPLETION OF BORING	
				8			
				9			
				10			

KH0V005913



JM Sorge, Inc.

BORING LOG

BORING NO. B402-3

SHEET 1 OF 1

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR J. M. SORGE INC		DRILLER S. GRASSO		SAMPLER B. KAISER			
DRILLING RIG TYPE SIMCO 2500		SIZE AND TYPE OF BIT 4" CD DRAG BIT		DATE STARTED 8-14-89			
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT DROP		DATE COMPLETED 8-14-89			
				WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input checked="" type="checkbox"/>			
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/5'				
				1		DARK BROWN SOIL	
						RED / BROWN LOAM	
				2		DARK / BROWN LOAM, WOOD	
						BROWN LOAM, GRAVEL	
				3		BROWN LOAM	
				4		FILL - GRAVEL, WOOD, GLASS, COAL	
				5			
				6			
				7		COMPLETION OF BORING	
				8			
			9				
			10				

KHOV005914



JM Sorge, Inc.

BORING LOG

BORING NO. B408-4

SHEET 1 OF 1

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR J. M. SORGE INC		DRILLER S. GRASSO		SAMPLER B. KAISER			
INSPECTOR B. KAISER		DRILLING RIG TYPE SIMCC 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT			
DATE STARTED 8-14-89		DATE COMPLETED 8-14-89		SAMPLER TYPE STAINLESS STEEL HAND AUGER			
HAMMER WEIGHT		DROP		TOTAL DEPTH 6.5'			
WATER LEVEL ENCOUNTERED		WATER LEVEL STABILIZED					
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/5'				
				1		BROWN SILTY LOAM	
				2		RED/BROWN SILTY LOAM	
				3		RED/BROWN SILTY LOAM	
				4		RED/BROWN SILTY LOAM	
				5		BROWN / GRAY CLAY	
				6		COMPLETION OF BORING	
				7			
				8			
				9			
				10			

KHOV005915



JM Sorge, Inc.

BORING LOG

BORING NO. B409-5

SHEET 1 OF 1

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.		ELEVATION AND DATUM					
DRILLING CONTRACTOR J.M. SORGE INC		DRILLER S. GRASSO		SAMPLER B. KAISER			
DRILLING RIG TYPE SIMCO 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT		DATE STARTED 8.15.89			
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DATE COMPLETED 8.15.89			
		DROP		TOTAL DEPTH 8.5'			
				WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input type="checkbox"/>			
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		RED/BROWN SANDY LOAM	
				2		DK. BROWN SANDY LOAM, GRAVEL	
				3		BROWN LOAM	
				4		BROWN LOAM	
				5		DARK BROWN SILTY LOAM	
				6		GRAVEL, GLASS	
				7		RED/BROWN CLAY LOAM	
				8		COMPLETION OF BORING	
				9			
				10			

KHOV005916



JM Sorge, Inc.

BORING LOG

BORING NO. B408-6SHEET 1 OF 1

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR J. M. SORGE INC		DRILLER S. GRASSO		SAMPLER B. KAISER		INSPECTOR B. KAISER	
DRILLING RIG TYPE SIMCO 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT		DATE STARTED 8-16-89		DATE COMPLETED 8-16-89	
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DROP		TOTAL DEPTH 3.5'	
						WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input checked="" type="checkbox"/>	
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		RED/BROWN SILTY LOAM, STONE	
				2		RED/BROWN LOAM, COAL	
				3			
	B408-6			4		COMPLETION OF BORING	
				5			
				6			
				7			
				8			
				9			
				10			

KH0V005917



JM Sorge, Inc.

BORING LOG

BORING NO. B408-7

SHEET 1 OF 1

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.		ELEVATION AND DATUM					
DRILLING CONTRACTOR J.M. SORGE INC		DRILLER S. GRASSO		SAMPLER B. KAISER			
DRILLING RIG TYPE SIMCO 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT		DATE STARTED 8.16.89			
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DATE COMPLETED 8.16.89			
		DROP		TOTAL DEPTH 8.5'			
				WATER LEVEL ENCOUNTERED 8.0' STABILIZED 8.0'			
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		RED / BROWN LOAM, GRAVEL	
				2		BLACK / BROWN LOAM GRAVEL	
				3		BROWN LOAM, COAL	
				4		DR. BROWN SILTY CLAY LOAM COAL, GRAVEL	
				5			
				6			
				7			
				8			
				9			
				10			
						COMPLETION OF BORING	

KHOV005918

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR J.M. SCORCE INC		DRILLER S. GRASSO		SAMPLER B. KAISER			
INSPECTOR B. KAISER		DRILLING RIG TYPE SIMCO 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT			
DATE STARTED 8-16-59		DATE COMPLETED 8-16-59		SAMPLER TYPE STAINLESS STEEL HAND AUGER			
HAMMER WEIGHT		DROP		TOTAL DEPTH 6.0'			
WATER LEVEL ENCOUNTERED		STABILIZED					
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		CONCRETE	
				2		BROWN SILTY LOAM	
				3			
				4			
				5			
				6		COMPLETION OF BORING	
				7			
				8			
				9			
				10			

KHOV005919



JM Sorge, Inc.

BORING LOG

BORING NO. B4cr-9

SHEET 1 OF 1

JOB NO. <u>89102</u>		CLIENT <u>HOV</u>		PROJECT <u>SITE - C</u>			
LOCATION <u>NEWARK, N.J.</u>				ELEVATION AND DATUM			
DRILLING CONTRACTOR <u>J.M. SORGE INC</u>		DRILLER <u>S. GRASSO</u>		SAMPLER <u>B. KAISER</u>		INSPECTOR <u>B. KAISER</u>	
DRILLING RIG TYPE <u>SIMCO 2800</u>		SIZE AND TYPE OF BIT <u>4" CD DRAG BIT</u>		DATE STARTED <u>8.16.57</u>		DATE COMPLETED <u>8.16.57</u>	
SAMPLER TYPE <u>STAINLESS STEEL HAND AUGER</u>		HAMMER WEIGHT		DROP		TOTAL DEPTH <u>8.5'</u>	
						WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input type="checkbox"/>	
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		CONCRETE	
				2		BLACK SANDY LOAM	
				3		RED/BROWN CLAY LOAM	
				4			
				5		RED/BROWN CLAY LOAM	
				6			
				7			
				8			
				9		COMPLETION OF BORING	
				10			

KHOV005921



JM Sorge, Inc.

BORING LOG

BORING NO. B408-10

SHEET 1 OF 1

JOB NO.

89102

CLIENT

HOU

PROJECT

SITE - C

ELEVATION AND DATUM

LOCATION

NEWARK, N.J.

DRILLING CONTRACTOR

J.M. SORGE INC.

DRILLER

S. GRASSO

SAMPLER

B. KAISER

INSPECTOR

B. KAISER

DRILLING RIG TYPE

SIMLC 2800

SIZE AND TYPE OF BIT

4" CD DRAG BIT

DATE STARTED

8.17.89

DATE COMPLETED

8.17.89

SAMPLER TYPE

STAINLESS STEEL HAND AUGER

HAMMER
WEIGHT

DROP

TOTAL DEPTH

3.5

WATER LEVEL
ENCOUNTERED STABILIZED

BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		CONCRETE	
				2		BROWN CLAY LOAM	
				3			
	B408-10			4		COMPLETION OF BORING	
				5			
				6			
				7			
				8			
				9			
				10			

KHOV005922

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR J.M. SURGE INC		DRILLER S. GRASSO		SAMPLER B. KAISER			
DRILLING RIG TYPE SIMCO 2500		SIZE AND TYPE OF BIT 4" CD DRAG BIT		DATE STARTED 8-19-89			
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DATE COMPLETED 8-18-89			
		DROP		TOTAL DEPTH 6.5'			
				WATER LEVEL ENCOUNTERED STABILIZED			
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		CONCRETE	
				2		RED / BROWN CLAY LOAM	
				3			
				4			
				5			
				6		LIGHT BROWN CLAY	
				7		COMPLETION OF BORING	
				8			
				9			
				10			

KHOV005923



JM Sorge, Inc.

BORING LOG

BORING NO. T89WIL-1

SHEET 1 OF 1

JOB NO. 89102		CLIENT HOV		PROJECT SITE - C			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR J.M. SORGE INC.		DRILLER S. GRASSO		SAMPLER B. KAISER			
DRILLING RIG TYPE SIMCO 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT		DATE STARTED 8.18.89			
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DATE COMPLETED 8.18.89			
		DROP		TOTAL DEPTH 6.5'			
				WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input type="checkbox"/>			
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		CONCRETE	
				2		RED/BROWN CLAY LOAM	
				3			
				4			
				5		LIGHT BROWN CLAY	
				6			
				7		COMPLETION OF BORING	
				8			
				9			
				10			

KHOV005924



JM Sorge, Inc.

BORING LOG

BORING NO. T143-1

SHEET 1 OF 1

JOB NO. 89101		CLIENT HOV		PROJECT SITE - E			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR JM SORGE INC		DRILLER S. GORDON		SAMPLER B. KAISER		INSPECTOR B. KAISER	
DRILLING RIG TYPE Simco 2800		SIZE AND TYPE OF BIT 1" CD DRAG BIT		DATE STARTED 8-15-89		DATE COMPLETED 8-15-89	
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DROP		TOTAL DEPTH 6.5'	
						WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input type="checkbox"/>	
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
	T143-1			1		CONCRETE	
				2		LIGHT BROWN SAND	
				3			
				4			
				5			
				6			
				7			
				8			
				9			
				10			
						COMPLETION OF BORING	

KHOV005925



JM Sorge, Inc.

BORING LOG

BORING NO. T259AC-1

SHEET 1 OF 1

JOB NO. <u>89101</u>		CLIENT <u>HOV</u>		PROJECT <u>SITE - E</u>			
LOCATION <u>NEWARK N.J.</u>				ELEVATION AND DATUM <u></u>			
DRILLING CONTRACTOR <u>JM SORGE INC</u>		DRILLER <u>S. GRADISSE</u>		SAMPLER <u>B. KAISER</u>			
DRILLING RIG TYPE <u>SIMCO 2800</u>		SIZE AND TYPE OF BIT <u>1" CD DRAG BIT</u>		DATE STARTED <u>8.15.89</u>			
SAMPLER TYPE <u>STAINLESS STEEL HAND AUGER</u>		HAMMER WEIGHT <u></u>		DATE COMPLETED <u>8.15.89</u>			
		DROP <u></u>		TOTAL DEPTH <u>6.5'</u>			
				WATER LEVEL ENCOUNTERED <u></u> STABILIZED <u></u>			
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		CONCRETE	
				2		GREY SAND, GRAVEL	
				3		BROWN SILTY LOAM	
				4		GRAVEL	
				5			
				6			
				7		COMPLETION OF BORING	
				8			
				9			
				10			

KHOV005926



JM Sorge, Inc.

BORING LOG

BORING NO. T206N

SHEET 1 OF 1

JOB NO. 89101		CLIENT HOV		PROJECT SITE - E			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR JM SORGE INC		DRILLER S. GORDON		SAMPLER B. KAISER		INSPECTOR B. KAISER	
DRILLING RIG TYPE Simco 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT		DATE STARTED 8-17-88		DATE COMPLETED 8-17-88	
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DROP		TOTAL DEPTH 7.0'	
						WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input type="checkbox"/>	
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		Red/Brown CLAY LOAM	
				2			
				3			
				4			
				5			
				6			
				7		COMPLETION OF BORING	
				8			
				9			
				10			

KHOV005927



JM Sorge, Inc.

BORING LOG

BORING NO. B404-1

SHEET 1 OF 1

JOB NO. <u>89101</u>		CLIENT <u>HOV</u>		PROJECT <u>SITE - E</u>			
LOCATION <u>NEWARK, N.J.</u>				ELEVATION AND DATUM			
DRILLING CONTRACTOR <u>JM SORGE INC</u>		DRILLER <u>S. GORDON</u>	SAMPLER <u>B. KAISER</u>	INSPECTOR <u>B. KAISER</u>			
DRILLING RIG TYPE <u>SIMCO 2800</u>		SIZE AND TYPE OF BIT <u>1" CD DRAG BIT</u>		DATE STARTED <u>8-17-89</u>	DATE COMPLETED <u>8-17-89</u>		
SAMPLER TYPE <u>STAINLESS STEEL HAND AUGER</u>		HAMMER WEIGHT	DROP	TOTAL DEPTH <u>8.5'</u>	WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input type="checkbox"/>		
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		BROWN LOAM, FILL - BRICK, ASH, COAL, GLASS	
				2			
				3			
				4			
				5		BROWN SILTY LOAM	
				6			
				7			
				8			
				9		COMPLETION OF BORING	
				10			

KHOV005928



JM Sorge, Inc.

BORING LOG

BORING NO. T134WM

SHEET 1 OF 1

JOB NO. 89101		CLIENT HOV		PROJECT SITE - E				
LOCATION NEWARK, N.J.				ELEVATION AND DATUM				
DRILLING CONTRACTOR JM SORGE INC		DRILLER S. GARDNER		SAMPLER B. KAISER		INSPECTOR B. KAISER		
DRILLING RIG TYPE SIMCO 2800		SIZE AND TYPE OF BIT 1" CD DRAG BIT		DATE STARTED 8-17-89		DATE COMPLETED 8-17-89		
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DROP		TOTAL DEPTH 6.0'		
						WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input checked="" type="checkbox"/>		
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS	
	NO.	RECOVERY FT.	BLOWS/6"					
				1		CONCRETE RED/BROWN SILTY LOAM, GRAVEL		
				2				
				3				
				4				
				5				
				6		COMPLETION OF BORING		
				7				
				8				
				9				
				10				

KHOV005929



JM Sorge, Inc.

BORING LOG

BORING NO. T134VL

SHEET 1 OF 1

JOB NO. <u>89101</u>		CLIENT <u>HOV</u>		PROJECT <u>SITE - E</u>			
LOCATION <u>NEWARK, N.J.</u>				ELEVATION AND DATUM			
DRILLING CONTRACTOR <u>JM SORGE INC</u>		DRILLER <u>S. GORDON</u>	SAMPLER <u>B. KAISER</u>	INSPECTOR <u>B. KAISER</u>			
DRILLING RIG TYPE <u>SIMCO 2500</u>		SIZE AND TYPE OF BIT <u>4" CD DRAG BIT</u>		DATE STARTED <u>8.17.89</u>	DATE COMPLETED <u>8.17.89</u>		
SAMPLER TYPE <u>STAINLESS STEEL HAND AUGER</u>		HAMMER WEIGHT	DROP	TOTAL DEPTH <u>6.0'</u>	WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input type="checkbox"/>		
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6'				
				1		CONCRETE	
				2		RED/BROWN SILTY LOAM	
				3		GRAVEL	
				4			
				5			
				6			
				7			
				8			
				9			
				10			
						COMPLETION OF BORING	

KHOV005930



JM Sorge, Inc.

BORING LOG

BORING NO. B4cd-2

SHEET 1 OF 1

JOB NO. <u>89101</u>		CLIENT <u>HOV</u>		PROJECT <u>SITE - E</u>			
LOCATION <u>NEWARK, N.J.</u>				ELEVATION AND DATUM			
DRILLING CONTRACTOR <u>JM SORGE INC</u>		DRILLER <u>S. GROSS</u>		SAMPLER <u>B. KAISER</u>		INSPECTOR <u>B. KAISER</u>	
DRILLING RIG TYPE <u>SIMCO 2800</u>		SIZE AND TYPE OF BIT <u>4" CD DRAG BIT</u>		DATE STARTED <u>8-17-89</u>		DATE COMPLETED <u>8-17-89</u>	
SAMPLER TYPE <u>STAINLESS STEEL HAND AUGER</u>		HAMMER WEIGHT		DROP		TOTAL DEPTH <u>6.5'</u>	
						WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input type="checkbox"/>	
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				1		BROWN LOAM FILL - ROCK, BRICK, ASH	
				2			
				3			
				4			
				5			
				6			
		B4cd-2		7		COMPLETION OF BORING	
				8			
				9			
				10			

KHOV005931



JM Sorge, Inc.

BORING LOG

BORING NO. B404-3

SHEET 1 OF 1

JOB NO. <u>89101</u>		CLIENT <u>HOV</u>		PROJECT <u>SITE - E</u>			
LOCATION <u>NEWARK, N.J.</u>				ELEVATION AND DATUM			
DRILLING CONTRACTOR <u>JM SORGE INC</u>		DRILLER <u>S. GORDON</u>		SAMPLER <u>B. KAISER</u>			
DRILLING RIG TYPE <u>SINCE 2800</u>		SIZE AND TYPE OF BIT <u>4" CD DRAG BIT</u>		DATE STARTED <u>8-15-89</u>			
SAMPLER TYPE <u>STAINLESS STEEL HAND AUGER</u>		HAMMER WEIGHT		DATE COMPLETED <u>8-15-89</u>			
		DROP		TOTAL DEPTH <u>18.5'</u>			
				WATER LEVEL ENCOUNTERED <u>17.0'</u> STABILIZED <u>17.0'</u>			
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				2		BROWN LOAM	
				4		FILL - BRICK, ASH, WOOD, COAL, ROCK	
				6		BROWN LOAM	
				8			
				10		BROWN SILTY LOAM	
				12			
				14			
				16			
				18			
				20			
						COMPLETION OF BORING	

KHOV005932



JM Sorge, Inc.

BORING LOG

BORING NO. B404-4

SHEET 1 OF 1

JOB NO. 89101		CLIENT HOV		PROJECT SITE - E			
LOCATION NEWARK, N.J.				ELEVATION AND DATUM			
DRILLING CONTRACTOR JM SORGE INC		DRILLER S. GORDON		SAMPLER B. KAISER		INSPECTOR B. KAISER	
DRILLING RIG TYPE SIMCO 2800		SIZE AND TYPE OF BIT 4" CD DRAG BIT		DATE STARTED 8.15.89		DATE COMPLETED 8.15.89	
SAMPLER TYPE STAINLESS STEEL HAND AUGER		HAMMER WEIGHT		DROP		TOTAL DEPTH 18.5'	
						WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input type="checkbox"/>	
BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/6"				
				2		Brown Loam	
				4		FILL - BRICK, WSH, WOOD, COAL, ROCK	
				6		Brown Loam	
				8			
				10		Brown Silty Loam	
				12			
				14			
				16			
				18			
				20			
						COMPLETION OF BORING	

KHOV005933



JM Sorge, Inc.

BORING LOG

BORING NO. B405-1

SHEET 1 OF 1

JOB NO. <u>89101</u>		CLIENT <u>HOV</u>		PROJECT <u>SITE - E</u>	
LOCATION <u>NEWARK, N.J.</u>				ELEVATION AND DATUM	
DRILLING CONTRACTOR <u>JM SORGE INC</u>		DRILLER <u>S. GARDNER</u>	SAMPLER <u>B. KAISER</u>	INSPECTOR <u>B. KAISER</u>	
DRILLING RIG TYPE <u>Simon 2800</u>		SIZE AND TYPE OF BIT <u>1" CD DRAG BIT</u>		DATE STARTED <u>8-18-89</u>	DATE COMPLETED <u>8-18-89</u>
SAMPLER TYPE <u>STAINLESS STEEL HAND AUGER</u>		HAMMER WEIGHT	DROP	TOTAL DEPTH <u>16.0'</u>	WATER LEVEL ENCOUNTERED <input type="checkbox"/> STABILIZED <input checked="" type="checkbox"/>

BORING/ CONSTRUCTION	SAMPLES			DEPTH FT.	WATER	DESCRIPTION OF SOILS	REMARKS
	NO.	RECOVERY FT.	BLOWS/5'				
				2		CONCRETE, 1" STONE	
				4		BROWN LOAM, BRICK, WOOD	
				6			
				8		RED / BROWN SILTY LOAM	
				10			
				12			
				14			
	B405-1			16		COMPLETION OF BORING	
				18			
				20			

KHOV005934



BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: B409-1

LOCATION: Bl. 409

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: A. HEFFRON

HAMMER WEIGHT:

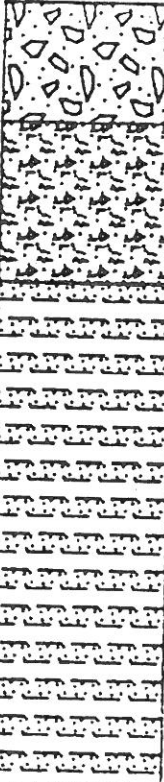
DRILLING DATES

ELEVATION: -

STROKE LENGTH:

START: 7/10/92 FINISH: SAME

TOTAL DEPTH: 11

PROFILE	SAMPLES		DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC. BLOWS/8 IN			
	B409-1		2		Brown silty loam with construction debris.
			4		Dark brown/black clayey silt with pebbles.
			6		
			8		Red/brown clayey silt with shale fragments. Water at 10 ft.
			10	▽	
			12		
			14		
			16		
			18		
			20		
			22		End of Boring
			24		
			26		
			28		
			30		

KHOV005935

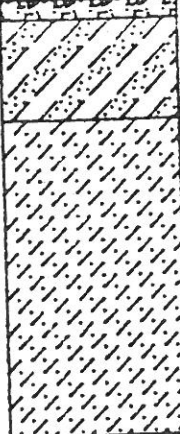


BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: B409-2		LOCATION: Bl. 409			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B409-2			2		Red/brown loam with pebbles.
						Grey/tan clay.
				4		Slightly clayey red/brown silt with minor coarse sand and fine gravel.
				6		
				8		
				10		
				12		
				14		
				16		
				18		
	B409-2			20		End of Boring
				22		
				24		
				26		
				28		
				30		

KHOV005936



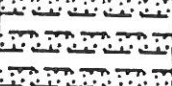
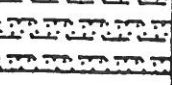



BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: B409-3		LOCATION: Bl. 409	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/10/92	FINISH: SAME
		ELEVATION:	
		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Grey/black loam with construction debris.
				4		
				6		Grey/tan clay.
				8		Red/brown clayey silt with shale fragments.
				10		
	B409-3			12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005937



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B409-4		LOCATION: Bl. 409	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/10/92	FINISH: SAME
		ELEVATION:	
		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Red/brown silty loam with minor shale fragments.
				4		
				6		
				8		
				10	▽	
	B409-4			12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005938



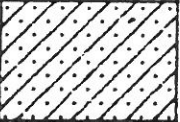
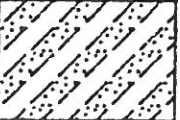


BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: B408-5		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME	
		ELEVATION:	
		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B408-5			2		Red-brown loam with gravel.
				4		Grey/black clayey silt with some gravel.
				6		Tan/black fine sandy clay, damp. Some gravel.
				8		Red/brown clayey, sandy silt.
				10		
				12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005939



BORING LOG

J M SORGE INC
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BORING NO.: B409-8

LOCATION: Bl. 409

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: A. HEFFRON

HAMMER WEIGHT:

DRILLING DATES

ELEVATION:

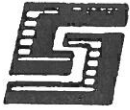
STROKE LENGTH:

START: 7/10/92 FINISH: SAME

TOTAL DEPTH: 11

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Brown silty loam with gravel and pebbles.
				4		Red/brown silt with gravel and pebbles.
				6		Black/tan to tan/black silty clay.
				8		Red/brown clayey silt with shale fragments.
				10		
				12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005940



BORING LOG

J M SORGE INC

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BORING NO.: P408-1		LOCATION: BI. 403			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Clayey, silty loam with construction debris.
				4		
				6		
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005941



BORING LOG

J M SORGE INC
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BORING NO.: P409-2		LOCATION: Bl. 403			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Clayey, silty loam with construction debris. Water at bottom of pit.
				4		
				6		
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		Bottom of Pit
				24		
				26		
				28		
				30		

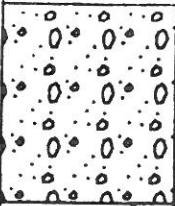
KHOV005942



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P403-1		LOCATION: Bl. 403			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/8/92 FINISH: SAME		TOTAL DEPTH: 5	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	S403-1			2		Fill material. Clayey sand with rocks and debris. Bedrock at bottom.
				4		
				6		Bottom of Pit
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

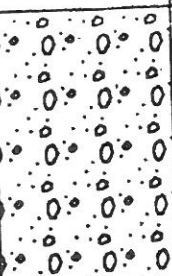
KHOV005943



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P403-2		LOCATION: Bl. 403			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/7/92 FINISH: SAME		TOTAL DEPTH: 7	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	S403-1			2		Reddish black loamy soil with cobbles and shale fragments. Weathered red shale at bottom.
				4		
				6		
				8		Bottom of Pit
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005944

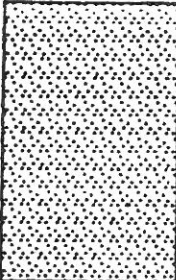
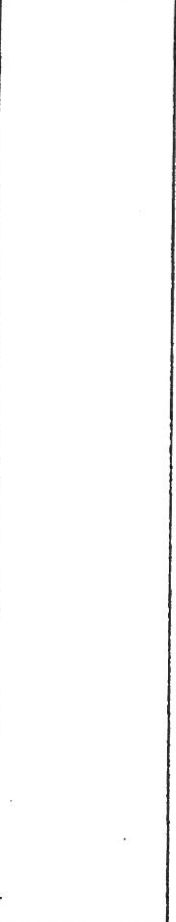


BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: P403-3		LOCATION: Bl. 403			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/7/92 FINISH: SAME		TOTAL DEPTH: 7	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	S403-1			2		Reddish black loam. Weathered red shale at bottom.
				4		
				6		<hr/> Bottom of Pit
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005945



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P404-1		LOCATION: Bl. 404			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 6/25/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Grey/black loamy soil and construction debris.
				4		
				6		
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

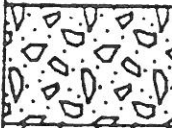

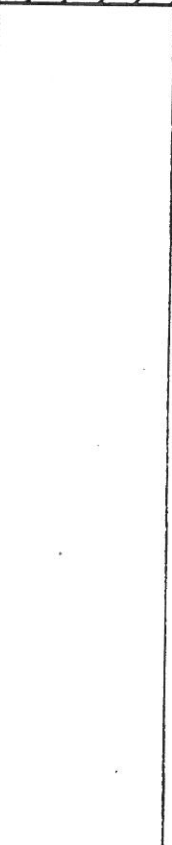
KHOV005946



BORING LOG

J M SORGE INC
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BORING NO.: P404-2		LOCATION: Bl. 404			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 8/26/92 FINISH: SAME		TOTAL DEPTH: 9	

PROFILE	SAMPLES		DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC. BLOWS/8 IN			
			2		Grey/black loamy soil and construction debris.
			4		Red/brown silty clay.
			6		
			8		
			10		Bottom of Pit
			12		
			14		
			16		
			18		
			20		
			22		
			24		
			26		
			28		
			30		

KHOV005947



BORING LOG

J M SORGE INC
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BORING NO.: P405-1		LOCATION: Bl. 405	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: test pit		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: T. BER	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 8/24/92 FINISH: SAME	
		ELEVATION:	
		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Red/brown loamy soil and construction debris.
				4		
				6		Bottom of Pit
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005948



BORING LOG

J M SORGE INC

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BORING NO.: P405-2		LOCATION: Bl. 405			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 6/24/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Red/brown loamy soil and construction debris.
				4		
				6		Bottom of Pit
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

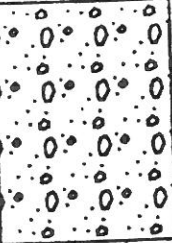
KHOV005949



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: P405-3		LOCATION: Bl. 405			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 8/24/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Red/brown loamy soil and construction debris.
				4		
				6		
				8		Bottom of Pit
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005950



BORING LOG

J M SORGE INC

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BORING NO.: B408-1

LOCATION: Bl. 408

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: ANDREW BER

HAMMER WEIGHT:

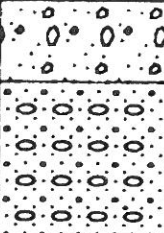
DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/9/92 FINISH: SAME

TOTAL DEPTH: 8

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	B408-1			2		Silty loam with construction debris
				4		Yellowish to reddish brown silty sand with fine gravel
				6		End of Boring.
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

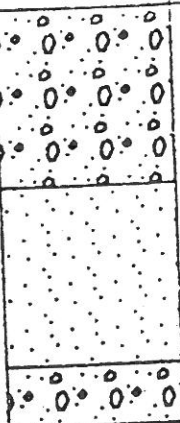
KHOV005951



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-2		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: ANDREW BER	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/9/92 FINISH: SAME	
		ELEVATION:	
		TOTAL DEPTH: 10.5	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B408-2			2		Reddish-brown silty loam with construction debris.
				4		
				6		Reddish-brown silty sand with gravel and construction debris.
				8		
				10		Reddish-brown clayey silt with shale fragments and rubble.
				12		Bottom of boring.
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005952



BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: B408-3

LOCATION: Bl. 406

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: ANDREW BER

HAMMER WEIGHT:


DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/9/92 FINISH: SAME

TOTAL DEPTH: 6.5

PROFILE	SAMPLES		DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC. BLOWS/6 IN			
	B408-3		2		Silty loam with construction debris.
			4		Silty, clayey yellow-brown sand with fine gravel.
			6		Dark grey/brown silty sand with fine gravel.
			8		
			10		End of Boring.
			12		
			14		
			16		
			18		
			20		
			22		
			24		
			26		
			28		
			30		

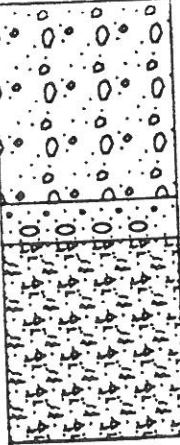
KHOV005953



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-4	LOCATION: Bl. 408	
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: SOLID STEM AUGER	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: ANDREW BER	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 7/9/92 FINISH: SAME	TOTAL DEPTH: 11.0

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Dark grey silty loam with construction debris.
				4		
				6		Brown/yellow-brown silty, gravelly sand.
				8		
				10		Reddish-brown silty sand with minor gravel.
				12		End of Boring.
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		


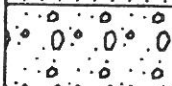
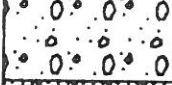

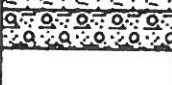
KH0V005954



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-5		LOCATION: BL. 408			
JOB NUMBER: 82050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: ANDREW BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/9/92 FINISH: SAME		TOTAL DEPTH: 9.50	

PROFILE	SAMPLES		DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC. BLOWS/8 IN			
	B408-5		2		Dark grey silty sand.
					Grey/brown silty sand with construction debris.
					Grey/brown silty, gravelly sand with construction debris.
					Yellow/brown silty, clayey sand with fine gravel.
					Dark brown silty sand with fine gravel.
					End of Boring.
			30		

KHOV005955



BORING LOG

J M SORGE INC
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BORING NO.: B408-8

LOCATION: Bl. 408

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPER: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: ANDREW BER

HAMMER WEIGHT:

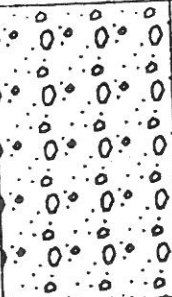
DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/9/92 FINISH: SAME

TOTAL DEPTH: 7.5

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B408-8			2		Grey-brown silty sand with construction debris.
				4		
				6		
				8		
				10		End of Boring.
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005956



BORING LOG

J M SORGE INC

(Page 1 of 1)

BORING NO.: B408-7

LOCATION: Bl. 408

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: ANDREW BER

HAMMER WEIGHT:

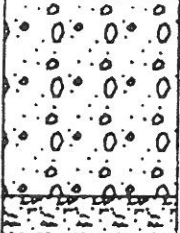
DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/9/92 FINISH: SAME

TOTAL DEPTH: 6.0

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
 B408-7				2		Grey-brown silty loam with gravel and construction debris.
				4		
				6		Reddish-brown silty, clayey sand with minor gravel.
				8		
				10		End of Boring.
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005957



BORING LOG

J M SORGE INC

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BORING NO.: B408-8

LOCATION: Bl. 408

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: ANDREW BER

HAMMER WEIGHT:

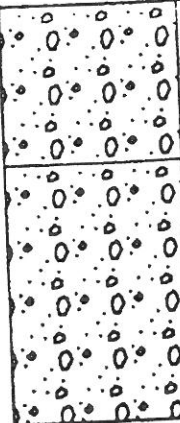
DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/9/92 FINISH: SAME

TOTAL DEPTH: 10.5

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B408-8			2		Yellowish-brown loam with construction debris.
				4		
				6		Grey-brown to reddish-brown silty, clayey sand with const. debris.
				8		
				10		
				12		End of Boring.
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

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BORING LOG

J M SORGE INC

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BORING NO.: B408-9		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: ANDREW BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11.0	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Black coal ash and loam.
				4		Red/brown gravelly silt.
				6		
				8		
				10		Soft reddish shale.
	B408-9			12		End of Boring.
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005959



BORING LOG

J M SORGE INC

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BORING NO.: P407-1

LOCATION: Bl. 403

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: test pit

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: T. BER

HAMMER WEIGHT:

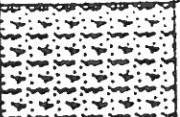
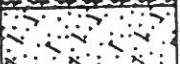
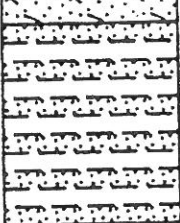
DRILLING DATES

ELEVATION:

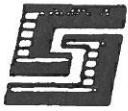
STROKE LENGTH:

START: 7/9/82 FINISH: SAME

TOTAL DEPTH: 10

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Dark yellow/light brown sandy loam.
				4		Light brown silty loam.
				6		Weathered red shale with sandy silt.
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		


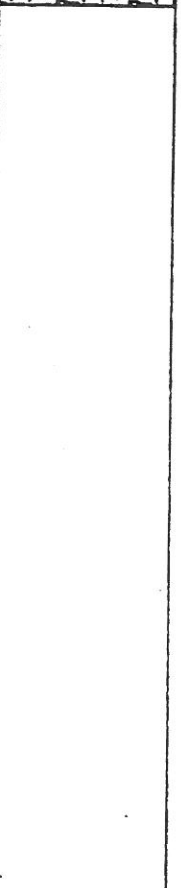
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BORING LOG

J M SORGE INC
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BORING NO.: P408-1		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/6/92 FINISH: SAME		TOTAL DEPTH: 8	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Fill material. Clayey unsorted sand and debris.
				4		
				6		
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

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BORING LOG

J M SORGE INC
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BORING NO.: P408-2	LOCATION: Bl. 408	
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: test pit	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: T. BER	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 7/8/92 FINISH: SAME	TOTAL DEPTH: 8

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Fill material. Clayey unsorted sand and debris.
				4		
				6		
				8		
				10		
				12		
				14		
				16		
				18		Bottom of Pit
				20		
				22		
				24		
				26		
				28		
				30		

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BORING LOG

J M SORGE INC

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BORING NO.: P408-3		LOCATION: BL. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/8/92 FINISH: SAME		TOTAL DEPTH: 9	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Fill material. Clayey unsorted sand and debris.
				4		
				6		Coal ash and burnt wood.
				8		Red/brown silty clay with cobbles, gravel, and sand.
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

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BORING LOG

J M SORGE INC
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BORING NO.: P408-4

LOCATION: Bl. 408

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: test pit

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: T. BER

HAMMER WEIGHT:

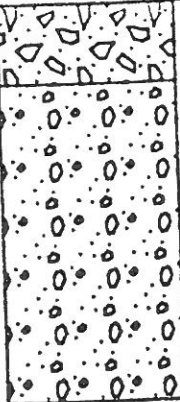
DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/6/92 FINISH: SAME

TOTAL DEPTH: 10

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Fill material. Clayey unsorted sand and debris.
				4		Red/brown silty sand with cobbles, and pebbles.
				6		
				8		
				10		Bottom of Pit
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

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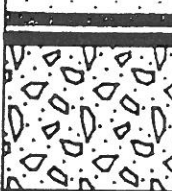
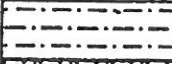
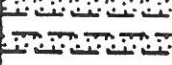
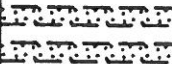
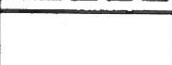


BORING LOG

J M SORGE INC

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BORING NO.: P408-5		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: test pit		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: T. BER			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/8/92 FINISH: SAME		TOTAL DEPTH: 10	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	S408-15			2		Fill material. Coal ash and loamy soil, layered with remnant asphalt paving.
				4		
				6		Fill material. Clayey unsorted sand and debris.
				8		Bluish, stained clay. Strong PHC odor.
				10		Weathered red/brown shale and sandy silt.
				12		
				14		Bottom of Pit
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

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BORING LOG

J M SORGE INC
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BORING NO.: P408-8

LOCATION: Bl. 408

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: test pit

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: T. BER

HAMMER WEIGHT:

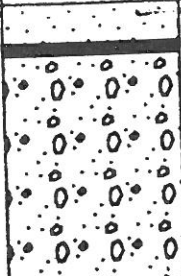
DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 7/8/92 FINISH: SAME

TOTAL DEPTH: 7

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Fill material. Coal ash and loamy soil, layered with remnant asphalt paving.
				4		
				6		Fill material. Clayey unsorted sand and debris.
				8		Bottom of Pit
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

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BORING LOG

J M SORGE INC

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BORING NO.: B408-11

LOCATION: Bl. 408

JOB NUMBER: 92050

PROJECT: K. HOVNANIAN

DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION

DRILLING METHOD: SOLID STEM AUGER

DRILLER: A. UNTAMO

BIT SIZE/TYPE: 4" DRAG

SAMPLER: A. HEFFRON

SAMPLER TYPE:

INSPECTOR: A. HEFFRON

HAMMER WEIGHT:

DRILLING DATES

ELEVATION:

STROKE LENGTH:

START: 6/24/92 FINISH: SAME

TOTAL DEPTH: 23

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	408-11A			2		Black/grey clayey fine sand.
				4		
	408-11B			6		Red/brown fine sandy clay with fine gravel. Water at 12-15 ft.
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		End of Boring



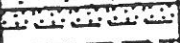
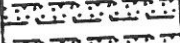
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BORING LOG

J M SORGE INC
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BORING NO.: B408-12		LOCATION: Bl. 408
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON
SAMPLER TYPE:		INSPECTOR: A. HEFFRON
HAMMER WEIGHT:	DRILLING DATES	
STROKE LENGTH:	START: 8/24/92 FINISH: SAME	ELEVATION:
		TOTAL DEPTH: 5.5

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Concrete, asphalt paving.
	408-12A			4		Unsorted sand with gravel and debris.
				6		Reddish/brown sandy clay.
	408-12B			8		End of Boring
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005968

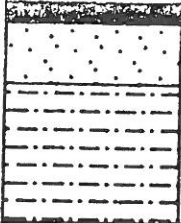


BORING LOG

J M SORGE INC

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BORING NO.: B408-13		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 8/24/92 FINISH: SAME	ELEVATION:
		TOTAL DEPTH: 5.5	

PROFILE	SAMPLES		DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC. BLOWS/6 IN			
	408-13A		2		Concrete.
			4		Black/brown coarse sand and gravel.
	408-13B		6		Dark brown/red clay with some sand.
			8		End of Boring
			10		
			12		
			14		
			16		
			18		
			20		
			22		
			24		
			26		
			28		
			30		

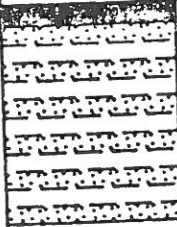
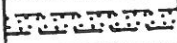
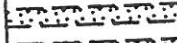
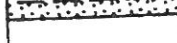
KHOV005969



BORING LOG

J M SORGE INC
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BORING NO.: B408-14		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 8/24/92 FINISH: SAME	
		ELEVATION:	
		TOTAL DEPTH: 5.5	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
	408-14A			2		Concrete.
				4		Red/brown sandy clay.
	408-14B			6		End of Boring
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

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BORING LOG

J M SORGE INC

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BORING NO.: B408-20		LOCATION: Bl. 408	
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION			
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:		DRILLING DATES	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME	
		ELEVATION:	
		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B408-20			2		Brown gravelly loam.
				4		
				6		
				8		
				10		
				12		
				14		
				16		
				18		
				20		
				22		End of Boring
				24		
				26		
				28		
				30		

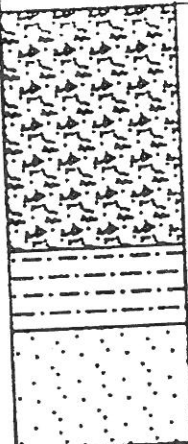
KHOV005971



BORING LOG

J M SORGE INC
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BORING NO.: B408-21	LOCATION: Bl. 408	
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: SOLID STEM AUGER	DRILLER: A. UNTAMO	
BIT SIZE/TYPE: 4" DRAG	SAMPLER: A. HEFFRON	
SAMPLER TYPE:	INSPECTOR: A. HEFFRON	
HAMMER WEIGHT:	DRILLING DATES	ELEVATION:
STROKE LENGTH:	START: 7/10/92 FINISH: SAME	TOTAL DEPTH: 11

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
	B408-21			2		Dark brown gravelly loam.
				4		
				6		Black/tan very fine sandy clay.
				8		Red/brown clayey silt with shale fragments and gravel.
				10		
				12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

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BORING LOG

J M SORGE INC

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BORING NO.: B408-22		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Dark brown gravelly loam and coal ash with construction debris.
				4		
				6		
				8		
				10		
				12		
				14		
				16		
				18		
				20		
B408-22				22		End of Boring
				24		
				26		
				28		
				30		

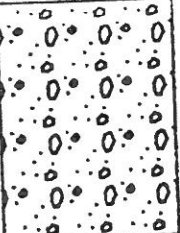
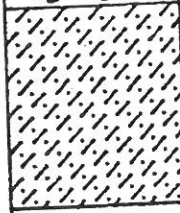

KHOV005973



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-23		LOCATION: Bl. 408
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION		
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON
SAMPLER TYPE:		INSPECTOR: A. HEFFRON
HAMMER WEIGHT:	DRILLING DATES	
STROKE LENGTH:	START: 7/10/92	FINISH: SAME
		ELEVATION:
		TOTAL DEPTH: 11

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/8 IN			
				2		Red/brown gravelly loam with construction debris.
				4		
				6		
				8		Black/tan fine sandy clay.
				10		
				12		
				14		End of Boring
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		


KHOV005974



BORING LOG

J M SORGE INC
(Page 1 of 1)

BORING NO.: B408-24		LOCATION: Bl. 408			
JOB NUMBER: 92050		PROJECT: K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION					
DRILLING METHOD: SOLID STEM AUGER		DRILLER: A. UNTAMO			
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON			
SAMPLER TYPE:		INSPECTOR: A. HEFFRON			
HAMMER WEIGHT:		DRILLING DATES		ELEVATION:	
STROKE LENGTH:		START: 7/10/92 FINISH: SAME		TOTAL DEPTH: 11	

PROFILE	SAMPLES			DEPTH	WATER	STRATIGRAPHY
	NUMBER	REC.	BLOWS/6 IN			
				2		Brown loam with coal ash and construction debris.
				4		Red/brown gravelly silt.
				6		
				8		
				10		Light-brown fine sandy, silty clay.
				12		End of Boring
				14		
				16		
				18		
				20		
				22		
				24		
				26		
				28		
				30		

KHOV005975

APPENDIX B
LABORATORY ANALYTICAL REPORTS

KHOV005976

Checked on 4/6/89
SEP 6 1989

ENVIROTECH RESEARCH, INC.

102

777 New Durham Road
Edison, New Jersey 08817
Tel: (201) 549-3900
Fax: (201) 549-3679

September 5, 1989

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876

Attention: Mr. Michael McGowan

Re: Job No. 5650 - Hov Site C


Dear Mr. McGowan:

Enclosed are the results you requested for the following
samples taken 8/18/89 at Hov Site C:

<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Requested</u>
27830	T88-WIL (2nd)	PHC
27831	T88-WIL-1 (2nd)	PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,



Michael J. Urban
Laboratory Manager

KHOV005977

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/5/89
Job No.: 5650 - Hov Site C
N.J. Certified Lab No. 12543
QA Batch 1451

PETROLEUM HYDROCARBONS

<u>Envirotech</u> <u>Sample #</u>	<u>Client ID</u>	<u>% Solid</u>	<u>Petroleum Hydrocarbons</u> <u>mg/kg (Dry Wt.)</u>
27830	T88-WIL	81.9	36
27831	T88-WIL-1	86.1	85

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

KHOV005978

SEP 12 1989

ENVIROTECH RESEARCH, INC.

777 New Durham Road
Edison, New Jersey 08817
Tel: (201) 549-3900
Fax: (201) 549-3679

September 11, 1989

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876

Attention: Mr. Michael McGowan

Re: Job No. 5649 - Hov Site E

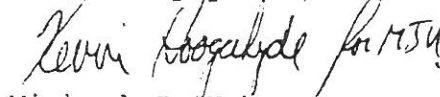
Dear Mr. McGowan:

Enclosed are the results you requested for the following
samples taken 8/18/89 at Hov Site E:

<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Requested</u>
27827	B405-1	Priority Pollutant +40 w/CN and Phenols
27828	B404-4	PHC
27829	B404-3	PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,



Michael J. Urban
Laboratory Manager

KHOV005979

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1382

VOLATILE ORGANICS

Parameter	Lab No. 27827 Client ID: B405-1 86.9% Solid		Detection Limit	
	Units: ug/kg (Dry Weight)		Units: ug/kg	
Benzene	ND		25	
Bromodichloromethane	ND		25	
Bromoform	ND		25	
Bromomethane	ND		50	
Carbon tetrachloride	ND		25	
Chlorobenzene	ND		25	
Chloroethane	ND		50	
2-Chloroethylvinyl ether	ND		25	
Chloroform	8.9JB		50	
Chloromethane	ND		25	
Dibromochloromethane	ND		25	
1,1-Dichloroethane	ND		25	
1,2-Dichloroethane	ND		25	
1,1-Dichloroethene	ND		25	
trans-1,2-Dichloroethene	ND		25	
1,2-Dichloropropane	ND		25	
cis-1,3-Dichloropropene	ND		25	
trans-1,3-Dichloropropene	ND		25	
Ethyl benzene	ND		25	
Methylene chloride	ND		25	
1,1,2,2-Tetrachloroethane	ND		25	
Tetrachloroethene	ND		25	
Toluene	ND		25	
1,1,1-Trichloroethane	6.4JB		25	
1,1,2-Trichloroethane	ND		25	
Trichloroethene	ND		25	
Trichlorofluoromethane	ND		50	
Vinyl chloride	ND		25	
Xylenes (Total)	ND			

KHOV005980

ENVIROTECH RESEARCH, INC.

Client: J.M. Sarge

Client Sample Identification: B405-1

Sample No.: 27827 QA Batch No.: 1382 Job No.: 5649

TENTATIVELY IDENTIFIED COMPOUNDS

Fraction: VOC

Concentration Units: PPM PPB

COMPOUND NAME		Retention Time	Estimated Conc.
=====		=====	=====
1.	NO VOLATILE ORGANIC COMPOUNDS FOUND <i>hu</i>		
2.			
3.			
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KHOV005981

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249C

ACID EXTRACTABLES

<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
	Lab No. 27827	
	Client ID: B405-1	
	86.9% Solid	
2-Chlorophenol	ND	330
2-Nitrophenol	ND	330
Phenol	ND	330
2,4-Dimethylphenol	ND	330
2,4-Dichlorophenol	ND	330
2,4,6-Trichlorophenol	ND	330
4-Chloro-3-methylphenol	ND	1700
2,4-Dinitrophenol	ND	1700
2-Methyl-4,6-dinitrophenol	ND	1700
Pentachlorophenol	ND	1700
4-Nitrophenol .	ND	

KHOV005982

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249C

BASE/NEUTRAL EXTRACTABLES

	Lab No. 27827	
	Client ID: B405-1	
	86.9% Solid	
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl) ether	ND	330
N-Nitrosodi-n-propylamine	ND	330
Nitrobenzene	ND	330
Hexachlorobutadiene	ND	330
1,2,4-Trichlorobenzene	ND	330
Isophorone	ND	330
Naphthalene	ND	330
Bis(2-chloroethoxy) methane	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Acenaphthylene	10J	330
Acenaphthene	ND	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	ND	330
4-Chlorophenyl phenyl ether	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

KHOV005983

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249C

BASE/NEUTRAL EXTRACTABLES (con't)

Parameter	Lab No. 27827 Client ID: B405-1 86.9% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
4-Bromophenyl phenyl ether	ND	330
Phenanthrene	110J	330
Anthracene	20J	330
Dibutyl phthalate	ND	330
Fluoranthene	190J	330
Pyrene	150J	330
Benzidine	ND	660
Butyl benzyl phthalate	ND	330
Bis(2-ethylhexyl) phthalate	1800	330
Chrysene	96J	330
Benzo(a)anthracene	85J	660
3,3'-Dichlorobenzidine	ND	330
Di-n-octyl phthalate	ND	330
Benzo(b)fluoranthene	160J	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	93J	330
Indeno(1,2,3-c,d)pyrene	63J	330
Dibenzo(a,h)anthracene	20J	330
Benzo(ghi)perylene	55J	330
N-Nitrosodimethylamine	ND	330

KHOV005984

ENVIROTECH RESEARCH, INC.

Client: J.M. SORGE

Client Sample Identification: B 405-1

Sample No.: 27827 QA Batch No.: 1249 Job No.: 5649

TENTATIVELY IDENTIFIED COMPOUNDS

Fraction: BNA

Concentration Units: PPM PPB

COMPOUND NAME		Retention Time	Estimated Conc.
=====		=====	=====
1.	NO SEMI-VOLATILE ORGANICS FOUND <i>400</i>		
2.			
3.			
4.			
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KHOV005985

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1234

ORGANOCHLORINE PESTICIDES and PCBs

<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
	Lab No. 27827	
	Client ID: B405-1	
	86.9% Solid	
Aldrin	ND	16
alpha-BHC	ND	16
beta-BHC	ND	16
delta-BHC	ND	16
gamma-BHC (Lindane)	ND	160
Chlordane	ND	32
4,4'-DDD	ND	32
4,4'-DDE	ND	32
4,4'-DDT	ND	32
Dieldrin	ND	32
Endosulfan I	ND	32
Endosulfan II	ND	32
Endosulfan sulfate	ND	32
Endrin	ND	32
Endrin aldehyde	ND	16
Heptachlor	ND	16
Heptachlor epoxide	ND	320
Toxaphene	ND	200
PCB-1016	ND	200
PCB-1221	ND	200
PCB-1232	ND	200
PCB-1242	ND	200
PCB-1248	ND	200
PCB-1254	ND	200
PCB-1260	ND	

KHOV005986

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543

METALS and WET CHEM

Lab No. 27827
Client ID: B405-1
86.9% Solid

<u>Parameter</u>	<u>Units: mg/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: mg/kg</u>	<u>Method Code</u>
Antimony	ND	1.0	F
Arsenic	ND	1.0	F
Beryllium	ND	1.0	P
Cadmium	ND	1.0	P
Chromium	28.9	2.0	P
Copper	14	5.0	P
Lead	39	10	P
Mercury	ND	0.1	CV
Nickel	22	8.0	P
Selenium	ND	1.0	F
Silver	ND	2.0	P
Thallium	ND	1.0	F
Zinc	49.5	4.0	P
Cyanide	ND	1.0	
Phenols	ND	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

KHOV005987

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1457

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	% Solid	Petroleum Hydrocarbons mg/kg (Dry Wt.)
27828	B404-4	90.3	ND
27829	B404-2	84.8	ND

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

KHOV005988

ENVIROTECH RESEARCH, INC.

777 New Durham Road
Edison, New Jersey 08817
Tel: (201) 549-3900
Fax: (201) 549-3679

Checked in 9/7/89

89101

101

September 6, 1989

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876

Attention: Mr. Michael McGowan

Re: Job No. 5621 - Hov Site E

Dear Mr. McGowan:

Enclosed are the results you requested for the following
samples taken 8/15 & 17/89 at Hov Site E:

<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Requested</u>
27647	T143-1 (406)	PHC
27648	T259AC-1 (404)	PHC
27649	T206N (406)	PHC
27650	T134-VL	PHC
27651	T134-WM	PHC
27652	B404-2	Priority Pollutant +40 w/PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,



Michael J. Urban
Laboratory Manager

KHOV005989

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1454

PETROLEUM HYDROCARBONS

<u>Envirotech Sample #</u>	<u>Client ID</u>	<u>% Solid</u>	<u>Petroleum Hydrocarbons mg/kg (Dry Wt.)</u>
27647	T143-1	89.3	ND
27648	T259AC-1	88.6	42
27649	T206N	88.1	ND
27650	T134-VL	90.3	ND
27651	T134-WM	78.6	ND
27652	B404-2	85.3	1170

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

KHOV005990

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1382

VOLATILE ORGANICS

Lab No. 27652		
Client ID: B404-2		
85.3% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
Benzene	ND	25
Bromodichloromethane	ND	25
Bromoform	ND	25
Bromomethane	ND	50
Carbon tetrachloride	ND	25
Chlorobenzene	ND	25
Chloroethane	ND	50
2-Chloroethylvinyl ether	ND	50
Chloroform	8.9JB	25
Chloromethane	ND	50
Dibromochloromethane	ND	25
1,1-Dichloroethane	ND	25
1,2-Dichloroethane	ND	25
1,1-Dichloroethene	ND	25
trans-1,2-Dichloroethene	ND	25
1,2-Dichloropropane	ND	25
cis-1,3-Dichloropropene	ND	25
trans-1,3-Dichloropropene	ND	25
Ethyl benzene	ND	25
Methylene chloride	ND	25
1,1,2,2-Tetrachloroethane	ND	25
Tetrachloroethene	7.3JB	25
Toluene	ND	25
1,1,1-Trichloroethane	8.2JB	25
1,1,2-Trichloroethane	ND	25
Trichloroethene	ND	25
Trichlorofluoromethane	ND	25
Vinyl chloride	ND	50
Xylenes (Total)	ND	25

KHOV005991

ENVIROTECH RESEARCH, INC.

Client: J. M. Sarge
Client Sample Identification: B404-2
Sample No.: 27652 QA Batch No.: 1382 Job No.: 5621

TENTATIVELY IDENTIFIED COMPOUNDS

Fraction: VOC Concentration Units: PPM PPB

COMPOUND NAME		Retention Time	Estimated Conc.
=====		=====	=====
1.	NO VOLATILE ORGANIC COMPOUNDS FOUND <i>On</i>		
2.			
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KHOV005992

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No: 12543
QA Batch 1249

ACID EXTRACTABLES

<u>Parameter</u>	Lab No. 27652 Client ID: B404-2 85.3% Solid <u>Units: ug/kg (Dry Weight)</u>	Detection Limit <u>-Units: ug/kg</u>
2-Chlorophenol	ND	1600
2-Nitrophenol	ND	1600
Phenol	ND	1600
2,4-Dimethylphenol	ND	1600
2,4-Dichlorophenol	ND	1600
2,4,6-Trichlorophenol	ND	1600
4-Chloro-3-methylphenol	ND	1600
2,4-Dinitrophenol	ND	8300
2-Methyl-4,6-dinitrophenol	ND	8300
Pentachlorophenol	ND	8300
4-Nitrophenol .	ND	8300

KHOV005993

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249

BASE/NEUTRAL EXTRACTABLES

Parameter	Lab No. 27652 Client ID: B404-2 85.3% Solid		Detection Limit
	Units: ug/kg (Dry Weight)		Units: ug/kg
1,3-Dichlorobenzene	ND		1600
1,4-Dichlorobenzene	ND		1600
Hexachloroethane	ND		1600
Bis(2-chloroethyl) ether	ND		1600
1,2-Dichlorobenzene	ND		1600
Bis(2-chloroisopropyl) ether	ND		1600
N-Nitrosodi-n-propylamine	ND		1600
Nitrobenzene	ND		1600
Hexachlorobutadiene	ND		1600
1,2,4-Trichlorobenzene	ND		1600
Isophorone	200J		1600
Naphthalene	ND		1600
Bis(2-chloroethoxy) methane	ND		1600
Hexachlorocyclopentadiene	ND		1600
2-Chloronaphthalene	750J		1600
Acenaphthylene	460J		1600
Acenaphthene	ND		1600
Dimethyl phthalate	ND		1600
2,6-Dinitrotoluene	540J		1600
Fluorene	ND		1600
4-Chlorophenyl phenyl ether	ND		1600
2,4-Dinitrotoluene	ND		1600
Diethylphthalate	ND		1600
N-Nitrosodiphenylamine	ND		1600
Hexachlorobenzene	ND		1600

KHOV005994

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249

BASE/NEUTRAL EXTRACTABLES (con't)

Parameter	Lab No. 27652 Client ID: B404-2 85.3% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
4-Bromophenyl phenyl ether	ND	1600
Phenanthrene	8110	1600
Anthracene	1900	1600
Dibutyl phthalate	ND	1600
Fluoranthene	12600	1600
Pyrene	11400	1600
Benzidine	ND	3300
Butyl benzyl phthalate	770J	1600
Bis(2-ethylhexyl) phthalate	19100	1600
Chrysene	6820	1600
Benzo(a)anthracene	6470	1600
3,3'-Dichlorobenzidine	ND	3300
Di-n-octyl phthalate	ND	1600
Benzo(b)fluoranthene	11900	1600
Benzo(k)fluoranthene	ND	1600
Benzo(a)pyrene	6140	1600
Indeno(1,2,3-c,d)pyrene	2140	1600
Dibenzo(a,h)anthracene	750J	1600
Benzo(ghi)perylene	1600	1600
N-Nitrosodimethylamine	ND	1600

KHOV005995

ENVIROTECH RESEARCH, INC.

Client: J. H. SORGE

Client Sample Identification: B404-2

Sample No.: 27652 QA Batch No.: 1249 Job No.: 5621

TENTATIVELY IDENTIFIED COMPOUNDS

Fraction: BN/A

Concentration Units: PPM

PPB ug/kg

	COMPOUND NAME	Retention Time	Estimated Conc.
1.	<u>C15H12 PAH</u>	<u>28.47</u>	<u>1,200</u>
2.	<u>" "</u>	<u>28.55</u>	<u>1,600</u>
3.	<u>COELUTING C15H10 / C15H12 PAH'S</u>	<u>28.81</u>	<u>2,300</u>
4.	<u>2-PHENYL-NAPHTHALENE</u>	<u>29.45</u>	<u>2,700</u>
5.	<u>UNKNOWN</u>	<u>30.49</u>	<u>980</u>
6.	<u>BENZ[5]NAPHTHO[2,3-d]FURAN</u>	<u>31.80</u>	<u>1,200</u>
7.	<u>C17H12 PAH</u>	<u>32.18</u>	<u>1,200</u>
8.	<u>" "</u>	<u>32.51</u>	<u>2,100</u>
9.	<u>METHYL-PYRENE ISOMER</u>	<u>32.82</u>	<u>1,400</u>
10.	<u>" " "</u>	<u>33.11</u>	<u>1,200</u>
11.	<u>7H-BENZ[de]ANTHRACEN-7-ONE (ISOMER)</u>	<u>34.14</u>	<u>3,100</u>
12.	<u>UNKNOWN</u>	<u>34.40</u>	<u>1,200</u>
13.	<u>BENZ[5]NAPHTHO[2,1-d]THIOPHENE (ISOMER)</u>	<u>34.46</u>	<u>1,600</u>
14.	<u>COELUTING C18H10 / C18H12 PAH'S</u>	<u>34.58</u>	<u>1,800</u>
15.	<u>7H-BENZ[de]ANTHRACEN-7-ONE (ISOMER)</u>	<u>34.79</u>	<u>1,800</u>
16.	<u>BENZ[5]NAPHTHO[1,2-d]THIOPHENE (ISOMER)</u>	<u>34.98</u>	<u>1,600</u>
17.	<u>C18H12 PAH</u>	<u>35.61</u>	<u>1,800</u>
18.	<u>METHYL-BENZ[a]ANTHRACENE ISOMER</u>	<u>36.55</u>	<u>2,100</u>
19.	<u>C19H14 PAH / COELUTING UNKNOWN</u>	<u>36.81</u>	<u>1,400</u>
20.	<u>C20H14 PAH</u>	<u>37.20</u>	<u>1,200</u>
21.	<u>5,12-NAPHTHACENEDIONE / COELUTING UNKNOWN</u>	<u>37.50</u>	<u>1,200</u>
22.	<u>PHOSPHORIC ACID (1,1-DIMETHYLETHYL) PHENYL DIPHENYL ESTER</u>	<u>37.78</u>	<u>5,300</u>
23.	<u>C20H12 PAH</u>	<u>38.81</u>	<u>3,100</u>
24.	<u>UNKNOWN</u>	<u>39.16</u>	<u>3,100</u>
25.	<u>C20H12 PAH</u>	<u>39.35</u>	<u>6,600</u>

KHOV005996

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1234

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 27652 Client ID: B404-2 85.3% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit Units: ug/kg</u>
Aldrin	ND	16
alpha-BHC	ND	16
beta-BHC	ND	16
delta-BHC	ND	16
gamma-BHC (Lindane)	ND	16
Chlordane	ND	16
4,4'-DDD	ND	160
4,4'-DDE	ND	32
4,4'-DDT	ND	32
Dieldrin	73	32
Endosulfan I	122	32
Endosulfan II	ND	32
Endosulfan sulfate	ND	32
Endrin	ND	32
Endrin aldehyde	ND	32
Heptachlor	ND	32
Heptachlor epoxide	18	16
Toxaphene	ND	16
PCB-1016	ND	320
PCB-1221	ND	200
PCB-1232	ND	200
PCB-1242	ND	200
PCB-1248	ND	200
PCB-1254	ND	200
PCB-1260	ND	200

KHOV005997

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543

METALS and WET CHEM

Lab No. 27652
Client ID: B404-2
85.3% Solid

<u>Parameter</u>	<u>Units: mg/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: mg/kg</u>	<u>Method Code</u>
Antimony	ND	1.0	F
Arsenic	4.7	1.0	F
Beryllium	ND	1.0	P
Cadmium	2.1	1.0	P
Chromium	21	10	P
Copper	58.4	5.0	A
Lead	273	10	CV
Mercury	1.17	0.1	P
Nickel	59	8.0	F
Selenium	ND	1.0	P
Silver	3.0	2.0	F
Thallium	ND	1.0	P
Zinc	332	4.0	
Cyanide	2.0	1.0	
Phenols	ND	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

KHOV005998

ENVIROTECH RESEARCH, INC.

777 New Durham Road
Edison, New Jersey 08817
Tel: (908) 549-3900
Fax: (908) 549-3679

CHECKED IN

7/27/92

DATA ENTERED

July 22, 1992

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. B956

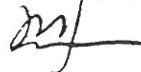
Dear Mr. Finley:

Enclosed are the results you requested for the following samples taken 6/23-25/92:

<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Requested</u>
68855	408-11A	PHC
68856	408-11B	PHC
68857	408-12A	PHC
68858	408-12B	PHC
68859	408-13A	PHC
68860	408-13B	PHC
68861	408-14A	PHC
68862	408-14B	PHC
68863	405-1	PHC
68864	405-2	PHC
68865	405-3	PHC
68866	405-4	BN +15 & PHC
68867	404-2	PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,



Michael J. Urban
Laboratory Manager

KHOV005999

TABLE OF CONTENTS

	<u>Section</u>
Methodology Summary/Data Reporting Qualifiers	1
Sample Data Summary Tables	2
QA Summary Tables/Non Conformance Summary	3
BFB Spectra	4
Standard Calibration and Calibration Check Reports	5
GC/MS - Raw Data	6
Chain of Custody/Lab Chronicles	7

KHOV006000

ENVIROTECH RESEARCH, INC.

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Appendix A, page 52, and analyzed by U.S. EPA Method 418.1.

KHOV006001

ENVIROTECH RESEARCH, INC.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Atomic
Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

Element	Water Test Method		Solid Test Method	
	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

KHOV006002

ENVIROTECH RESEARCH, INC.

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Method 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040
Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4
respectively for hydrogen cyanide
and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

KHOV006003

DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

KHOV006004

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 7/22/92
Job No.: B956
N.J. Certified Lab No. 12543
QA Batch 2363

PETROLEUM HYDROCARBONS

<u>Envirotech Sample #</u>	<u>Client ID</u>	<u>% Solid</u>	<u>Petroleum Hydrocarbons mg/kg (Dry Wt.)</u>
68855	408-11A	79.0	ND
68856	408-11B	84.8	50
68857	408-12A	89.0	ND
68858	408-12B	78.6	170
68859	408-13A	86.8	ND
68860	408-13B	84.3	ND
68861	408-14A	86.8	ND
68862	408-14B	85.6	ND
68863	405-1	88.4	ND
68864	405-2	89.7	ND
68865	405-3	87.6	ND
68866	405-4	82.0	4220
68867	404-2	93.1	315

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

KHOV006005

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 7/22/92
Job No.: B956
N.J. Certified Lab No. 12543
QA Batch 1844B

BASE/NEUTRAL EXTRACTABLES

Parameter	Lab No. 68866 Client ID: 405-4 82.0% Solid		Detection Limit
	Units: ug/kg (Dry Weight)		Units: ug/kg
1,3-Dichlorobenzene	ND		6700
1,4-Dichlorobenzene	ND		6700
Hexachloroethane	ND		6700
Bis(2-chloroethyl) ether	ND		6700
1,2-Dichlorobenzene	ND		6700
Bis(2-chloroisopropyl) ether	ND		6700
N-Nitrosodi-n-propylamine	ND		6700
Nitrobenzene	ND		6700
Hexachlorobutadiene	ND		6700
1,2,4-Trichlorobenzene	ND		6700
Isophorone	3800J		6700
Naphthalene	ND		6700
Bis(2-chloroethoxy) methane	ND		6700
Hexachlorocyclopentadiene	ND		6700
2-Chloronaphthalene	ND		6700
Acenaphthylene	4100J		6700
Acenaphthene	ND		6700
Dimethyl phthalate	ND		6700
2,6-Dinitrotoluene	6300J		6700
Fluorene	ND		6700
4-Chlorophenyl phenyl ether	ND		6700
2,4-Dinitrotoluene	ND		6700
Diethylphthalate	ND		6700
N-Nitrosodiphenylamine	ND		6700
Hexachlorobenzene	ND		6700

KHOV006006

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 7/22/92
Job No.: B956
N.J. Certified Lab No. 12543
QA Batch 1844B

BASE/NEUTRAL EXTRACTABLES (con't)

	Lab No. 68866	
	Client ID: 405-4	
	82.0% Solid	
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
4-Bromophenyl phenyl ether	ND	6700
Phenanthrene	9500	6700
Anthracene	ND	6700
Dibutyl phthalate	ND	6700
Fluoranthene	390J	6700
Pyrene	1300J	6700
Benzidine	ND	13000
Butyl benzyl phthalate	ND	6700
Bis(2-ethylhexyl) phthalate	ND	6700
Chrysene	200J	6700
Benzo(a)anthracene	ND	6700
3,3'-Dichlorobenzidine	ND	13000
Di-n-octyl phthalate	ND	6700
Benzo(b)fluoranthene	ND	6700
Benzo(k)fluoranthene	ND	6700
Benzo(a)pyrene	ND	6700
Indeno(1,2,3-c,d)pyrene	ND	6700
Dibenzo(a,h)anthracene	ND	6700
Benzo(ghi)perylene	ND	6700
N-Nitrosodimethylamine	ND	6700

KHOV006007

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 405-4
 Sample No.: 68866 Job No.: 8956 Fraction: BN

Concentration Units: PPM PPB

COMPOUND NAME		Retention Time	Estimated Conc.
1.	C ₁₂ H ₂₆ Alkane	15.96	98000
2.	C ₁₃ H ₂₈ Alkane	17.87	140000
3.	methyl Naphthalene isomer	18.16	66000
4.	Unknown Alkane	19.27	78000
5.	"	19.67	98000
6.	dimethyl Naphthalene isomer	19.85	63000
7.	"	20.12	81000
8.	C ₁₆ H ₃₄ Alkane	20.72	89000
9.	C ₁₅ H ₃₂ Alkane	21.34	74000
10.	tri methyl Naphthalene isomer/coeluting unknown	22.20	74000
11.	C ₁₆ H ₃₄ Alkane	22.91	72000
12.	C ₁₈ H ₃₈ Alkane	23.65	70000
13.	C ₁₇ H ₃₆ Alkane	24.39	54000
14.	2,6,10,14-tetramethyl Pentadecane	24.51	98000
15.	C ₂₀ H ₄₂ Alkane	25.95	60000
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			

KHOV006008

1/2

CHAIN-OF-CUSTODY RECORD

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817

(908) 849-3900

JMS COC. 1001
ENVIROTECH JOB NO. B956

PROJECT NAME

JM Sorel

NAME OF CLIENT (FOR REPORT AND BILLING)
50 County Line Rd
ADDRESS
Soreville NJ 088316
CITY STATE ZIP
Chris Finley
ATTENTION
218-0066
PHONE

DATE SMPLED.	TIME SMPLED.	SMPLED. BY	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	ENVIROTECH SAMPLE NUMBER
6/24/92	1007	A4	SOIL	—	1	408-11A Z-2.5	PHC	68855
	1027					408-11B S-5.5		68856
	1147					408-12A Z-2.5		68857
	1155					408-12B S-5.5		68858
	1212					408-13A Z-2.5		68859
	1218					408-13B S-5.5		68860
	1342					408-14A Z-2.5		68861
	1350					408-14B S-5.5		68862

TOTAL NO. OF CONTAINERS: 8

SPECIAL INSTRUCTIONS: EPA. RUN BUT IF PHC IS OVER 500 ppm

KHOV006009

1. RELINQUISHED BY: Chris P. Sorel	DATE/TIME 26 June 92 1635	1. RECEIVED BY: Sally Gorman	DATE/TIME —	3. RECEIVED BY:
2. RELINQUISHED BY:	DATE/TIME —	2. RECEIVED BY:	DATE/TIME —	4. RECEIVED BY:

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/1/92

DATE RECEIVED 6/26/92

JOB No. B956

<u>Analytic Parameter</u>	<u>Extraction Date/Time</u>	<u>Extractor's Initials</u>	<u>Analysis Date/Time</u>	<u>Analyst's Initials</u>	<u>QA Batch No.</u>
PHC	6/29/92	DL	6/30/92	MD	2363

KHOV006011

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006012

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/1/92
DATE RECEIVED 6/26/92
JOB No. B956

KHOV006013

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/1/92
DATE RECEIVED 6/26/92
JOB No. 3956

KHOV006014

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/1/92
DATE RECEIVED 6/26/92
JOB No. B956

KHOV006015

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

JOB No. 3956

KHOV006016

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/1/92
DATE RECEIVED 6/26/92
JOB No. B956

KHOV006017

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006018

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/1/92
DATE RECEIVED 6/26/92
JOB No. B956

KHOV006019

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006020

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/1/92

DATE RECEIVED 6/26/92

JOB No. B956

<u>Analytic Parameter</u>	<u>Extraction Date/Time</u>	<u>Extractor's Initials</u>	<u>Analysis Date/Time</u>	<u>Analyst's Initials</u>	<u>QA Batch No.</u>
PHC	6/29/92	DL	6/30/92	MD	2363

KH0V006021

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KNOV006022

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/1/92

DATE RECEIVED 6/26/92

JOB No. 3956

<u>Analytic Parameter</u>	<u>Extraction Date/Time</u>	<u>Extractor's Initials</u>	<u>Analysis Date/Time</u>	<u>Analyst's Initials</u>	<u>QA Batch No.</u>
PHC	7/2/92	DL	7/2/92	MD	2363

KHOV006023

ENVIROTECH RESEARCH, INC.

777 New Durham Road
Edison, New Jersey 08817
Tel: (908) 549-3900
Fax: (908) 549-3679

CHECKED IN 8/8/92
DATA ENTERED _____

August 13, 1992

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. C007 - Hovnanian

Dear Mr. Finley:

Enclosed are the results you requested for the following
samples taken 7/6/92 & 7/7/92:

<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Requested</u>
69127	403-1	BN +15 & PHC
69128	403-2	PHC
69129	403-3	PHC
69130	403-4	PHC
69131	403-5	PHC
69132	403-6	VOA +15, BN +15 & PHC
69133	403-7	PP +40
69134	403-8	PHC
69135	403-9	PHC
69136	403-10	PHC
69137	403-11	BN +15 & PHC
69138	403-12	PHC
69139	406-1	PHC
69140	406-2	PHC
69141	406-3	PP +40
69142	407-1	PP +40
69143	407-2	PHC
69144	407-4	PHC
69145	407-5	PHC
69146	407-6	PHC
69147	407-7	PHC
69148	407-8	PHC

KHOV006024

ENVIROTECH RESEARCH, INC.

<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Requested</u>
69149	408-16	VOA +15, BN +15 & PHC
69150	408-15	VOA +15, BN +15 & PHC
69151	403-13	PHC
69152	403-14	PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,



Michael J. Urban
Laboratory Manager

KHOV006025

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KHOV006026

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Appendix A, page 52, and analyzed by U.S. EPA Method 418.1.

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Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)
- A - Flame Atomic Absorption
- F - Furnace Atomic Absorption
- CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

Element	Water Test Method		Solid Test Method	
	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

KHOV006028

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Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Method 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040
Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4
respectively for hydrogen cyanide
and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

KHOV006029

DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

KHOV006030

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2369

PETROLEUM HYDROCARBONS

<u>Envirotech Sample #</u>	<u>Client ID</u>	<u>% Solid</u>	<u>Petroleum Hydrocarbons mg/kg (Dry Wt.)</u>
69127	403-1	86.9	6940
69128	403-2	87.8	ND
69129	403-3	88.4	ND
69130	403-4	88.1	ND
69131	403-5	87.9	ND
69132	403-6	69.2	1610

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

KHOV006031

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2370

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	% Solid	Petroleum Hydrocarbons
			mg/kg (Dry Wt.)
69134	403-8	84.3	110
69135	403-9	87.8	ND
69136	403-10	86.0	120
69137	403-11	88.2	5110
69138	403-12	86.6	36
69139	406-1	89.1	ND
69140	406-2	87.1	ND
69141	406-3	89.9	52
69144	407-4	92.6	ND
69145	407-5	89.3	ND
69146	407-6	83.8	130
69147	407-7	91.5	28
69148	407-8	90.4	180
69149	408-16	82.8	29300
69150	408-15	86.7	1680
69151	403-13	87.6	ND
69152	403-14	87.4	ND

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

KHOV006032

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

Lab No. 69127		
Client ID: 403-1		
86.9% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
1,3-Dichlorobenzene	ND	6700
1,4-Dichlorobenzene	ND	6700
Hexachloroethane	ND	6700
Bis(2-chloroethyl) ether	ND	6700
1,2-Dichlorobenzene	ND	6700
Bis(2-chloroisopropyl) ether	ND	6700
N-Nitrosodi-n-propylamine	ND	6700
Nitrobenzene	ND	6700
Hexachlorobutadiene	ND	6700
1,2,4-Trichlorobenzene	ND	6700
Isophorone	ND	6700
Naphthalene	ND	6700
Bis(2-chloroethoxy) methane	ND	6700
Hexachlorocyclopentadiene	ND	6700
2-Chloronaphthalene	ND	6700
Acenaphthylene	ND	6700
Acenaphthene	ND	6700
Dimethyl phthalate	ND	6700
2,6-Dinitrotoluene	ND	6700
Fluorene	560J	6700
4-Chlorophenyl phenyl ether	ND	6700
2,4-Dinitrotoluene	ND	6700
Diethylphthalate	ND	6700
N-Nitrosodiphenylamine	ND	6700
Hexachlorobenzene	ND	6700

KHOV006033

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

Parameter	Lab No. 69127 Client ID: 403-1 86.9% Solid		Detection Limit
	Units: ug/kg (Dry Weight)		Units: ug/kg
4-Bromophenyl phenyl ether	ND		6700
Phenanthrene	1300J		6700
Anthracene	ND		6700
Dibutyl phthalate	ND		6700
Fluoranthene	320J		6700
Pyrene	560J		6700
Benzidine	ND		13000
Butyl benzyl phthalate	ND		6700
Bis(2-ethylhexyl) phthalate	ND		6700
Chrysene	ND		6700
Benzo(a)anthracene	ND		13000
3,3'-Dichlorobenzidine	ND		6700
Di-n-octyl phthalate	ND		6700
Benzo(b)fluoranthene	ND		6700
Benzo(k)fluoranthene	ND		6700
Benzo(a)pyrene	ND		6700
Indeno(1,2,3-c,d)pyrene	ND		6700
Dibenzo(a,h)anthracene	ND		6700
Benzo(ghi)perylene	ND		6700
N-Nitrosodimethylamine	ND		6700

KHOV006034

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 403-1

Sample No.: 69127 Job No.: C007 Fraction: BN

Concentration Units: PPM PPB

COMPOUND NAME		Retention Time	Estimated Conc.
1.	<u>C₁₂H₂₆ alkane</u>	<u>15.07</u>	<u>10,000</u>
2.	<u>C₁₃H₂₈ alkane</u>	<u>16.85</u>	<u>12,000</u>
3.	<u>C₁₄H₃₀ alkane</u>	<u>18.51</u>	<u>18,000</u>
4.	<u>C₁₅H₃₂ alkane</u>	<u>20.07</u>	<u>17,000</u>
5.	<u>C₁₆H₃₄ alkane</u>	<u>21.54</u>	<u>17,000</u>
6.	<u>C₁₇H₃₆ alkane</u>	<u>22.95</u>	<u>14,000</u>
7.	<u>unknown alkane</u>	<u>23.03</u>	<u>10,000</u>
8.	<u>"</u>	<u>24.40</u>	<u>8,400</u>
9.	<u>C₁₉H₄₀ alkane</u>	<u>25.54</u>	<u>12,000</u>
10.	<u>C₂₀H₄₂ alkane</u>	<u>26.75</u>	<u>12,000</u>
11.	<u>C₂₁H₄₄ alkane</u>	<u>27.90</u>	<u>10,000</u>
12.	<u>unknown alkane</u>	<u>29.41</u>	<u>14,000</u>
13.	<u>"</u>	<u>32.08</u>	<u>9,200</u>
14.	<u>"</u>	<u>33.57</u>	<u>14,000</u>
15.	<u>unknown</u>	<u>37.19</u>	<u>10,000</u>
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KHOV006035

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2124

VOLATILE ORGANICS

Lab No. 69132		
Client ID: 403-6		
69.2% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
Benzene	ND	5.0
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	10
2-Chloroethylvinyl ether	ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Ethyl benzene	ND	5.0
Methylene chloride	9.1B	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
1,1,1-Trichloroethane	210	5.0
1,1,2-Trichloroethane	ND	5.0
Trichloroethene	ND	5.0
Trichlorofluoromethane	ND	10
Vinyl chloride	ND	5.0
Xylenes (Total)	ND	

KHOV006036

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 403-6

Sample No.: 69132 Job No.: C007 Fraction: VOC

Concentration Units: PPM PPB

COMPOUND NAME	Retention Time	Estimated Conc.
1. NO VOLATILE ORGANICS COMPOUNDS FOUND CC		
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KHOV006037

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

<u>Parameter</u>	Lab No. 69132 Client ID: 403-6 69.2% Solid		Detection Limit
	<u>Units: ug/kg (Dry Weight)</u>		<u>Units: ug/kg</u>
1,3-Dichlorobenzene	ND		17000
1,4-Dichlorobenzene	ND		17000
Hexachloroethane	ND		17000
Bis(2-chloroethyl) ether	ND		17000
1,2-Dichlorobenzene	ND		17000
Bis(2-chloroisopropyl) ether	ND		17000
N-Nitrosodi-n-propylamine	ND		17000
Nitrobenzene	ND		17000
Hexachlorobutadiene	ND		17000
1,2,4-Trichlorobenzene	ND		17000
Isophorone	ND		17000
Naphthalene	ND		17000
Bis(2-chloroethoxy) methane	ND		17000
Hexachlorocyclopentadiene	ND		17000
2-Chloronaphthalene	ND		17000
Acenaphthylene	ND		17000
Acenaphthene	ND		17000
Dimethyl phthalate	ND		17000
2,6-Dinitrotoluene	ND		17000
Fluorene	ND		17000
4-Chlorophenyl phenyl ether	ND		17000
2,4-Dinitrotoluene	ND		17000
Diethylphthalate	ND		17000
N-Nitrosodiphenylamine	ND		17000
Hexachlorobenzene	ND		17000

KHOV006038

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
4-Bromophenyl phenyl ether	ND	17000
Phenanthrene	670J	17000
Anthracene	ND	17000
Dibutyl phthalate	ND	17000
Fluoranthene	1200J	17000
Pyrene	1100J	17000
Benzidine	ND	33000
Butyl benzyl phthalate	ND	17000
Bis(2-ethylhexyl) phthalate	ND	17000
Chrysene	970J	17000
Benzo(a)anthracene	ND	17000
3,3'-Dichlorobenzidine	ND	33000
Di-n-octyl phthalate	ND	17000
Benzo(b)fluoranthene	780J	17000
Benzo(k)fluoranthene	690J	17000
Benzo(a)pyrene	750J	17000
Indeno(1,2,3-c,d)pyrene	590J	17000
Dibenzo(a,h)anthracene	ND	17000
Benzo(ghi)perylene	620J	17000
N-Nitrosodimethylamine	ND	17000

KHOV006039

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 403-6

Sample No.: 69132 Job No.: C007 Fraction: BN

Concentration Units: PPM PPB

COMPOUND NAME	Retention Time	Estimated Conc.
1. NO SEMI-VOLATILE ORGANICS FOUND ^{SP}		
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25.		

KHOV006040

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2124

VOLATILE ORGANICS

Lab No. 69133		
Client ID: 403-7		
88.6% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
Benzene	ND	5.0
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	10
2-Chloroethylvinyl ether	ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Ethyl benzene	ND	5.0
Methylene chloride	3.0JB	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
1,1,1-Trichloroethane	9.6	5.0
1,1,2-Trichloroethane	ND	5.0
Trichloroethene	ND	5.0
Trichlorofluoromethane	ND	5.0
Vinyl chloride	ND	10
Xylenes (Total)	ND	5.0

KHOV006041

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 403-7

Sample No.: 69133 Job No.: C007 Fraction: VOC

Concentration Units: PPM PPB

COMPOUND NAME		Retention Time	Estimated Conc.
1.	NO VOLATILE ORGANICS COMPOUNDS FOUND		
2.			
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KHOV006042

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

ACID EXTRACTABLES

Lab No. 69133

Client ID: 403-7

88.6% Solid

<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
2-Chlorophenol	ND	3300
2-Nitrophenol	ND	3300
Phenol	ND	3300
2,4-Dimethylphenol	ND	3300
2,4-Dichlorophenol	ND	3300
2,4,6-Trichlorophenol	ND	3300
4-Chloro-3-methylphenol	ND	3300
2,4-Dinitrophenol	ND	17000
2-Methyl-4,6-dinitrophenol	ND	17000
Pentachlorophenol	ND	17000
4-Nitrophenol	ND	17000

KHOV006043

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

	Lab No. 69133	
	Client ID: 403-7	
	88.6% Solid	
	Units: ug/kg (Dry Weight)	Detection Limit
		Units: ug/kg
<u>Parameter</u>		
	ND	3300
1,3-Dichlorobenzene	ND	3300
1,4-Dichlorobenzene	ND	3300
Hexachloroethane	ND	3300
Bis(2-chloroethyl) ether	ND	3300
1,2-Dichlorobenzene	ND	3300
Bis(2-chloroisopropyl) ether	ND	3300
N-Nitrosodi-n-propylamine	ND	3300
Nitrobenzene	ND	3300
Hexachlorobutadiene	ND	3300
1,2,4-Trichlorobenzene	ND	3300
Isophorone	ND	3300
Naphthalene	ND	3300
Bis(2-chloroethoxy) methane	ND	3300
Hexachlorocyclopentadiene	ND	3300
2-Chloronaphthalene	ND	3300
Acenaphthylene	ND	3300
Acenaphthene	ND	3300
Dimethyl phthalate	ND	3300
2,6-Dinitrotoluene	ND	3300
Fluorene	ND	3300
4-Chlorophenyl phenyl ether	ND	3300
2,4-Dinitrotoluene	ND	3300
Diethylphthalate	ND	3300
N-Nitrosodiphenylamine	ND	3300
Hexachlorobenzene	ND	3300

KHOV006044

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
4-Bromophenyl phenyl ether	ND	3300
Phenanthrene	660J	3300
Anthracene	140J	3300
Dibutyl phthalate	ND	3300
Fluoranthene	1200J	3300
Pyrene	1300J	3300
Benzidine	ND	6700
Butyl benzyl phthalate	ND	3300
Bis(2-ethylhexyl) phthalate	510J	3300
Chrysene	860J	3300
Benzo(a)anthracene	ND	3300
3,3'-Dichlorobenzidine	ND	6700
Di-n-octyl phthalate	ND	3300
Benzo(b)fluoranthene	480J	3300
Benzo(k)fluoranthene	560J	3300
Benzo(a)pyrene	170J	3300
Indeno(1,2,3-c,d)pyrene	370J	3300
Dibenzo(a,h)anthracene	160J	3300
Benzo(ghi)perylene	450J	3300
N-Nitrosodimethylamine	ND	3300

KHOV006045

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 403-7

Sample No.: 69133 Job No.: 0007 Fraction: EN/A

Concentration Units: PPM PPB

COMPOUND NAME		Retention Time	Estimated Conc.
1.	unknown	14.33	4500
2.	unknown alkane	18.13	1900
3.	C ₁₄ H ₃₀ alkane	18.50	1900
4.	unknown	18.98	1500
5.	unknown alkane	19.49	1500
6.	unknown	19.55	3000
7.	unknown alkane	20.07	1500
8.	C ₁₆ H ₃₄ alkane	21.54	1900
9.	unknown alkane	22.23	1500
10.	"	23.02	3400
11.	C ₁₇ H ₃₆ alkane	24.39	2200
12.	unknown	24.45	2200
13.	C ₁₈ H ₃₈ alkane	26.74	1900
14.	unknown alkane	29.40	2200
15.	"	30.25	1500
16.	unknown steroid	35.01	2600
17.	"	35.14	3400
18.	"	36.59	2200
19.	unknown	36.75	2600
20.	unknown alkane	37.13	1900
21.	unknown	37.20	16800
22.	"	37.78	1500
23.	"	37.89	6800
24.	"	39.50	2600
25.			

KHOV006046

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 69133		
Client ID: 403-7		
88.6% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
Aldrin	ND	16
alpha-BHC	ND	16
beta-BHC	ND	16
delta-BHC	ND	16
gamma-BHC (Lindane)	ND	16
Chlordane	ND	160
4,4'-DDD	ND	32
4,4'-DDE	ND	32
4,4'-DDT	ND	32
Dieldrin	ND	32
Endosulfan I	ND	16
Endosulfan II	ND	32
Endosulfan sulfate	ND	32
Endrin	ND	32
Endrin aldehyde	ND	32
Heptachlor	ND	16
Heptachlor epoxide	ND	16
Toxaphene	ND	320
PCB-1016	ND	160
PCB-1221	ND	160
PCB-1232	ND	160
PCB-1242	ND	160
PCB-1248	ND	160
PCB-1254	ND	160
PCB-1260	ND	160

KHOV006047

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69133 Client ID: 403-7 88.6% Solid			
<u>Parameter</u>	<u>Units: mg/kg (Dry Weight)</u>	<u>Detection Limit Units: mg/kg</u>	<u>Method Code</u>
Antimony	ND	6.0	P
Arsenic	2.7	0.5	F
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	13.1	1.0	P
Copper	43.3	2.5	P
Lead	428	5.0	P
Mercury	0.24	0.1	CV
Nickel	10	4.0	P
Selenium	ND	0.5	F
Silver	ND	1.0	P
Thallium	ND	5.0	F
Zinc	207	2.0	P
Cyanide	ND	1.0	
Phenols	13.0	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

KHOV006048

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

	Lab No. 69137	
	Client ID: 403-11	
	88.2% Solid	Detection Limit
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Units: ug/kg</u>
1,3-Dichlorobenzene	ND	670
1,4-Dichlorobenzene	ND	670
Hexachloroethane	ND	670
Bis(2-chloroethyl) ether	ND	670
1,2-Dichlorobenzene	ND	670
Bis(2-chloroisopropyl) ether	ND	670
N-Nitrosodi-n-propylamine	ND	670
Nitrobenzene	ND	670
Hexachlorobutadiene	ND	670
1,2,4-Trichlorobenzene	ND	670
Isophorone	ND	670
Naphthalene	ND	670
Bis(2-chloroethoxy) methane	ND	670
Hexachlorocyclopentadiene	ND	670
2-Chloronaphthalene	ND	670
Acenaphthylene	ND	670
Acenaphthene	ND	670
Dimethyl phthalate	ND	670
2,6-Dinitrotoluene	ND	670
Fluorene	ND	670
4-Chlorophenyl phenyl ether	ND	670
2,4-Dinitrotoluene	ND	670
Diethylphthalate	ND	670
N-Nitrosodiphenylamine	ND	670
Hexachlorobenzene	ND	670

KHOV006049

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

<u>Parameter</u>	Lab No. 69137 Client ID: 403-11 88.2% Solid		Detection Limit	
	<u>Units: ug/kg (Dry Weight)</u>		<u>Units: ug/kg</u>	
4-Bromophenyl phenyl ether	ND		670	
Phenanthrene	130J		670	
Anthracene	36J		670	
Dibutyl phthalate	ND		670	
Fluoranthene	220J		670	
Pyrene	200J		670	
Benzidine	ND		1300	
Butyl benzyl phthalate	ND		670	
Bis(2-ethylhexyl) phthalate	ND		670	
Chrysene	140J		670	
Benzo(a)anthracene	ND		670	
3,3'-Dichlorobenzidine	ND		1300	
Di-n-octyl phthalate	ND		670	
Benzo(b)fluoranthene	110J		670	
Benzo(k)fluoranthene	94J		670	
Benzo(a)pyrene	120J		670	
Indeno(1,2,3-c,d)pyrene	100J		670	
Dibenzo(a,h)anthracene	19J		670	
Benzo(ghi)perylene	94J		670	
N-Nitrosodimethylamine	ND		670	

KHOV006050

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 403-11

Sample No.: 69137 Job No.: C007 Fraction: BN

Concentration Units: PPM PPB

COMPOUND NAME	Retention Time	Estimated Conc.
1. <u>Unknown</u>	<u>26.05</u>	<u>380</u>
2. <u>"</u>	<u>26.25</u>	<u>300</u>
3. <u>"</u>	<u>35.05</u>	<u>530</u>
4. <u>"</u>	<u>36.67</u>	<u>450</u>
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____
11. _____	_____	_____
12. _____	_____	_____
13. _____	_____	_____
14. _____	_____	_____
15. _____	_____	_____
16. _____	_____	_____
17. _____	_____	_____
18. _____	_____	_____
19. _____	_____	_____
20. _____	_____	_____
21. _____	_____	_____
22. _____	_____	_____
23. _____	_____	_____
24. _____	_____	_____
25. _____	_____	_____

KHOV006051

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2124

VOLATILE ORGANICS

Lab No. 69142 Client ID: 407-1 90.5% Solid			Detection Limit	
Parameter	Units: ug/kg (Dry Weight)		Units: ug/kg	
		ND		5.0
Benzene		ND		5.0
Bromodichloromethane		ND		5.0
Bromoform		ND	10	
Bromomethane		ND		5.0
Carbon tetrachloride		ND		5.0
Chlorobenzene		ND	10	
Chloroethane		ND	10	
2-Chloroethylvinyl ether		ND		5.0
Chloroform		ND	10	
Chloromethane		ND		5.0
Dibromochloromethane		ND		5.0
1,1-Dichloroethane		ND		5.0
1,2-Dichloroethane		ND		5.0
1,1-Dichloroethene		ND		5.0
trans-1,2-Dichloroethene		ND		5.0
1,2-Dichloropropane		ND		5.0
cis-1,3-Dichloropropene		ND		5.0
trans-1,3-Dichloropropene		ND		5.0
Ethyl benzene		ND		5.0
Methylene chloride	2.6JB			5.0
1,1,2,2-Tetrachloroethane		ND		5.0
Tetrachloroethene		ND		5.0
Toluene		ND		5.0
1,1,1-Trichloroethane		ND		5.0
1,1,2-Trichloroethane		ND		5.0
Trichloroethene		ND		5.0
Trichlorofluoromethane		ND	10	
Vinyl chloride		ND		5.0
Xylenes (Total)		ND		

KHOV006052

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 407-1

Sample No.: 69142 Job No.: C007 Fraction: VOC

Concentration Units: PPM PPB

COMPOUND NAME	Retention Time	Estimated Conc.
1. NO VOLATILE ORGANICS COMPOUNDS FOUND CC		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
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22.		
23.		
24.		
25.		

KHOV006053

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

ACID EXTRACTABLES

Lab No. 69142		
Client ID: 407-1		
90.5% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
2-Chlorophenol	ND	330
2-Nitrophenol	ND	330
Phenol	ND	330
2,4-Dimethylphenol	ND	330
2,4-Dichlorophenol	ND	330
2,4,6-Trichlorophenol	ND	330
4-Chloro-3-methylphenol	ND	1700
2,4-Dinitrophenol	ND	1700
2-Methyl-4,6-dinitrophenol	ND	1700
Pentachlorophenol	ND	1700
4-Nitrophenol	ND	

KHOV006054

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69142		
Client ID: 407-1		
90.5% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit Units: ug/kg</u>
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl) ether	ND	330
N-Nitrosodi-n-propylamine	ND	330
Nitrobenzene	ND	330
Hexachlorobutadiene	ND	330
1,2,4-Trichlorobenzene	ND	330
Isophorone	ND	330
Naphthalene	ND	330
Bis(2-chloroethoxy) methane	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	ND	330
4-Chlorophenyl phenyl ether	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

KHOV006055

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

	Lab No. 69142	
	Client ID: 407-1	
	90.5% Solid	
	Units: ug/kg (Dry Weight)	Detection Limit
<u>Parameter</u>		<u>Units: ug/kg</u>
4-Bromophenyl phenyl ether	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Dibutyl phthalate	ND	330
Fluoranthene	22J	330
Pyrene	21J	330
Benzidine	ND	670
Butyl benzyl phthalate	ND	330
Bis(2-ethylhexyl) phthalate	ND	330
Chrysene	14J	330
Benzo(a)anthracene	12J	330
3,3'-Dichlorobenzidine	ND	670
Di-n-octyl phthalate	ND	330
Benzo(b)fluoranthene	23J	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	12J	330
Indeno(1,2,3-c,d)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(ghi)perylene	ND	330
N-Nitrosodimethylamine	ND	330

KHOV006056

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 407-1

Sample No.: 109142 Job No.: 1007 Fraction: BN/A

Concentration Units: PPM **PPB**

COMPOUND NAME		Retention Time	Estimated Conc.
1.	unknown	14.77	330
2.	"	40.28	590
3.	"	41.31	150
4.	"	43.38	260
5.			
6.			
7.			
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25.			

KHOV006057

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Parameter	Lab No. 69142 Client ID: 407-1 90.5% Solid		Detection Limit
	Units: ug/kg (Dry Weight)		Units: ug/kg
Aldrin	ND		16
alpha-BHC	ND		16
beta-BHC	ND		16
delta-BHC	ND		16
gamma-BHC (Lindane)	ND		16
Chlordane	ND		160
4,4'-DDD	ND		32
4,4'-DDE	ND		32
4,4'-DDT	ND		32
Dieldrin	ND		32
Endosulfan I	ND		16
Endosulfan II	ND		32
Endosulfan sulfate	ND		32
Endrin	ND		32
Endrin aldehyde	ND		16
Heptachlor	ND		16
Heptachlor epoxide	ND		320
Toxaphene	ND		160
PCB-1016	ND		160
PCB-1221	ND		160
PCB-1232	ND		160
PCB-1242	ND		160
PCB-1248	ND		160
PCB-1254	ND		160
PCB-1260	ND		160

KHOV006058

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69142			
Client ID: 407-1			
90.5% Solid			
<u>Parameter</u>	<u>Units: mg/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: mg/kg</u>	<u>Method Code</u>
Antimony	ND	6.0	P
Arsenic	1.1	0.5	F
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	8.8	1.0	P
Copper	35.9	2.5	P
Lead	40	5.0	P
Mercury	ND	0.1	CV
Nickel	8.7	4.0	P
Selenium	ND	0.5	F
Silver	ND	1.0	P
Thallium	ND	0.5	F
Zinc	50.9	2.0	P
Cyanide	ND	1.0	
Phenols	ND	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

KHOV006059

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2124

VOLATILE ORGANICS

Lab No. 69143 Client ID: 407-2 90.0% Solid		Detection Limit
Parameter	Units: ug/kg (Dry Weight)	Units: ug/kg
Benzene	ND	5.0
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	10
2-Chloroethylvinyl ether	ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Ethyl benzene	ND	5.0
Methylene chloride	1.9JB	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Trichloroethene	ND	5.0
Trichlorofluoromethane	ND	10
Vinyl chloride	ND	5.0
Xylenes (Total)	ND	

KHOV006060

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 407-2

Sample No.: 69143 Job No.: C007 Fraction: VOC

Concentration Units: PPM PPB

COMPOUND NAME	Retention Time	Estimated Conc.
CC		
1. NO VOLATILE ORGANICS COMPOUNDS FOUND		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
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23.		
24.		
25.		

KHOV006061

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

ACID EXTRACTABLES

Lab No. 69143		
Client ID: 407-2		
90.0% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
2-Chlorophenol	ND	330
2-Nitrophenol	ND	330
Phenol	ND	330
2,4-Dimethylphenol	ND	330
2,4-Dichlorophenol	ND	330
2,4,6-Trichlorophenol	ND	330
4-Chloro-3-methylphenol	ND	1700
2,4-Dinitrophenol	ND	1700
2-Methyl-4,6-dinitrophenol	ND	1700
Pentachlorophenol	ND	1700
4-Nitrophenol	ND	

KHOV006062

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

	Lab No. 69143	
	Client ID: 407-2	
	90.0% Solid	
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl) ether	ND	330
N-Nitrosodi-n-propylamine	ND	330
Nitrobenzene	ND	330
Hexachlorobutadiene	ND	330
1,2,4-Trichlorobenzene	ND	330
Isophorone	ND	330
Naphthalene	ND	330
Bis(2-chloroethoxy) methane	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	ND	330
4-Chlorophenyl phenyl ether	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

KHOV006063

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

Parameter	Lab No. 69143 Client ID: 407-2 90.0% Solid		Detection Limit
	Units: ug/kg (Dry Weight)		Units: ug/kg
4-Bromophenyl phenyl ether	ND		330
Phenanthrene	8.5J		330
Anthracene	ND		330
Dibutyl phthalate	ND		330
Fluoranthene	14J		330
Pyrene	13J		330
Benzidine	ND		670
Butyl benzyl phthalate	ND		330
Bis(2-ethylhexyl) phthalate	ND		330
Chrysene	9.8J		330
Benzo(a)anthracene	ND		330
3,3'-Dichlorobenzidine	ND		670
Di-n-octyl phthalate	ND		330
Benzo(b)fluoranthene	14J		330
Benzo(k)fluoranthene	ND		330
Benzo(a)pyrene	6.6J		330
Indeno(1,2,3-c,d)pyrene	ND		330
Dibenzo(a,h)anthracene	ND		330
Benzo(ghi)perylene	ND		330
N-Nitrosodimethylamine	ND		330

KHOV006064

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 407-2

Sample No.: 69143 Job No.: C007 Fraction: BNJA

Concentration Units: PPM PPB

COMPOUND NAME	Retention Time	Estimated Conc.
1. NO SEMI-VOLATILE ORGANICS FOUND <i>JS</i>		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
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12.		
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24.		
25.		

KHOV006065

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 69143		
Client ID: 407-2		
90.0% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
Aldrin	ND	16
alpha-BHC	ND	16
beta-BHC	ND	16
delta-BHC	ND	16
gamma-BHC (Lindane)	ND	16
Chlordane	ND	160
4,4'-DDD	ND	32
4,4'-DDE	ND	32
4,4'-DDT	ND	32
Dieldrin	ND	32
Endosulfan I	ND	16
Endosulfan II	ND	32
Endosulfan sulfate	ND	32
Endrin	ND	32
Endrin aldehyde	ND	16
Heptachlor	ND	16
Heptachlor epoxide	ND	320
Toxaphene	ND	160
PCB-1016	ND	160
PCB-1221	ND	160
PCB-1232	ND	160
PCB-1242	ND	160
PCB-1248	ND	160
PCB-1254	ND	160
PCB-1260	ND	160

KHOV006066

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69143
Client ID: 407-2
90.0% Solid

<u>Parameter</u>	<u>Units: mg/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: mg/kg</u>	<u>Method Code</u>
Antimony	ND	6.0	P
Arsenic	1.2	0.5	F
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	6.3	1.0	P
Copper	30.4	2.5	P
Lead	8.5	5.0	P
Mercury	ND	0.1	CV
Nickel	6.5	4.0	P
Selenium	ND	0.5	F
Silver	ND	1.0	P
Thallium	ND	0.5	F
Zinc	31.2	2.0	P
Cyanide	ND	1.0	
Phenols	ND	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

KHOV006067

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2124D

VOLATILE ORGANICS

Lab No. 69149 Client ID: 408-16 82.8% Solid		Detection Limit
Parameter	Units: ug/kg (Dry Weight)	Units: ug/kg
Benzene	ND	5.0
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	10
2-Chloroethylvinyl ether	ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Ethyl benzene	ND	5.0
Methylene chloride	17JB	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Trichloroethene	ND	5.0
Trichlorofluoromethane	ND	10
Vinyl chloride	ND	5.0
Xylenes (Total)	ND	

KHOV006068

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: H08-16

Sample No.: 69149 Job No.: C007 Fraction: VOL

Concentration Units: PPM (PPB)

COMPOUND NAME	Retention Time	Estimated Conc.
1. <u>1,1,3-trimethylcyclohexane</u>	<u>25.05</u>	<u>180</u>
2. <u>C₉H₁₆ hydrocarbon</u>	<u>25.24</u>	<u>80</u>
3. <u>Ethylmethylcyclohexane isomer</u>	<u>26.31</u>	<u>110</u>
4. <u>unknown</u>	<u>27.79</u>	<u>220</u>
5. <u>C₉H₁₆ hydrocarbon co-eluting C₉H₈</u>	<u>28.53</u>	<u>220</u>
6. <u>C₁₀H₂₀ hydrocarbon hydrocarbon</u>	<u>30.05</u>	<u>440</u>
7. <u>C₁₀H₁₈ "</u>	<u>30.57</u>	<u>150</u>
8. <u>unknown</u>	<u>31.49</u>	<u>160</u>
9. <u>Decahydronaphthalene</u>	<u>33.34</u>	<u>480</u>
10. <u>(2-methylpropyl)cyclohexane</u>	<u>37.27</u>	<u>860</u>
11. <u>unknown</u>	<u>52.63</u>	<u>240</u>
12. <u>"</u>	<u>63.40</u>	<u>340</u>
13. _____	_____	_____
14. _____	_____	_____
15. _____	_____	_____
16. _____	_____	_____
17. _____	_____	_____
18. _____	_____	_____
19. _____	_____	_____
20. _____	_____	_____
21. _____	_____	_____
22. _____	_____	_____
23. _____	_____	_____
24. _____	_____	_____
25. _____	_____	_____

KHOV006069

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1848M-B

BASE/NEUTRAL EXTRACTABLES

<u>Parameter</u>	Lab No. 69149 Client ID: 408-16 82.8% Solid		Detection Limit	
	<u>Units: ug/kg (Dry Weight)</u>		<u>Units: ug/kg</u>	
1,3-Dichlorobenzene	ND		3300	
1,4-Dichlorobenzene	ND		3300	
Hexachloroethane	ND		3300	
Bis(2-chloroethyl) ether	ND		3300	
1,2-Dichlorobenzene	ND		3300	
Bis(2-chloroisopropyl) ether	ND		3300	
N-Nitrosodi-n-propylamine	ND		3300	
Nitrobenzene	ND		3300	
Hexachlorobutadiene	ND		3300	
1,2,4-Trichlorobenzene	ND		3300	
Isophorone	ND		3300	
Naphthalene	ND		3300	
Bis(2-chloroethoxy) methane	ND		3300	
Hexachlorocyclopentadiene	ND		3300	
2-Chloronaphthalene	ND		3300	
Acenaphthylene	ND		3300	
Acenaphthene	ND		3300	
Dimethyl phthalate	ND		3300	
2,6-Dinitrotoluene	ND		3300	
Fluorene	ND		3300	
4-Chlorophenyl phenyl ether	ND		3300	
2,4-Dinitrotoluene	ND		3300	
Diethylphthalate	ND		3300	
N-Nitrosodiphenylamine	ND		3300	
Hexachlorobenzene	ND		3300	

KHOV006070

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1848M-B

BASE/NEUTRAL EXTRACTABLES (con't)

	Lab No. 69149	
	Client ID: 408-16	
	82.8% Solid	
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
4-Bromophenyl phenyl ether	ND	3300
Phenanthrene	ND	3300
Anthracene	ND	3300
Dibutyl phthalate	ND	3300
Fluoranthene	ND	3300
Pyrene	ND	3300
Benzidine	ND	6700
Butyl benzyl phthalate	ND	3300
Bis(2-ethylhexyl) phthalate	ND	3300
Chrysene	ND	3300
Benzo(a)anthracene	ND	3300
3,3'-Dichlorobenzidine	ND	6700
Di-n-octyl phthalate	ND	3300
Benzo(b)fluoranthene	1000J	3300
Benzo(k)fluoranthene	ND	3300
Benzo(a)pyrene	ND	3300
Indeno(1,2,3-c,d)pyrene	ND	3300
Dibenzo(a,h)anthracene	ND	3300
Benzo(ghi)perylene	ND	3300
N-Nitrosodimethylamine	ND	3300

KHOV006071

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 408-16

Sample No.: 169149 Job No.: C007 Fraction: BN

Concentration Units: PPM

PPB

COMPOUND NAME		Retention Time	Estimated Conc.
1.	unknown	38.48	30000
2.	"	39.90	30000
3.	"	40.93	30000
4.			
5.			
6.			
7.			
8.			
9.			
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25.			

KHOV006072

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2124D

VOLATILE ORGANICS

Lab No. 69150		
Client ID: 408-15		
86.7% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
Benzene	ND	10
Bromodichloromethane	ND	10
Bromoform	ND	10
Bromomethane	ND	20
Carbon tetrachloride	ND	10
Chlorobenzene	ND	10
Chloroethane	ND	20
2-Chloroethylvinyl ether	ND	20
Chloroform	ND	10
Chloromethane	ND	20
Dibromochloromethane	ND	10
1,1-Dichloroethane	ND	10
1,2-Dichloroethane	ND	10
1,1-Dichloroethene	ND	10
trans-1,2-Dichloroethene	ND	10
1,2-Dichloropropane	ND	10
cis-1,3-Dichloropropene	ND	10
trans-1,3-Dichloropropene	ND	10
Ethyl benzene	ND	10
Methylene chloride	6.8JB	10
1,1,2,2-Tetrachloroethane	ND	10
Tetrachloroethene	ND	10
Toluene	ND	10
1,1,1-Trichloroethane	ND	10
1,1,2-Trichloroethane	ND	10
Trichloroethene	ND	10
Trichlorofluoromethane	ND	10
Vinyl chloride	ND	20
Xylenes (Total)	ND	10

KHOV006073

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 408-15
 Sample No.: 69150 Job No.: 0007 Fraction: VOL

Concentration Units: PPM PPB

COMPOUND NAME		Retention Time	Estimated Conc.
1.	1,1,3-trimethylcyclohexane	25.03	31
2.	Ethylmethylcyclohexane isomer	26.32	32
3.	unknown	28.61	53
4.	C ₁₀ H ₂₀ hydrocarbon	30.06	110
5.	unknown	31.53	40
6.	"	33.01	340
7.	"	37.93	310
8.	2,3-dihydro-methyl-1H Indene isomer	39.71	210
9.	Ethyl dimethylbenzene isomer / co-eluting unknown	55.87	687
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			

KHOV006074

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

	Lab No. 69150	
	Client ID: 408-15	
	86.7% Solid	
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
1,3-Dichlorobenzene	ND	3300
1,4-Dichlorobenzene	ND	3300
Hexachloroethane	ND	3300
Bis(2-chloroethyl) ether	ND	3300
1,2-Dichlorobenzene	ND	3300
Bis(2-chloroisopropyl) ether	ND	3300
N-Nitrosodi-n-propylamine	ND	3300
Nitrobenzene	ND	3300
Hexachlorobutadiene	ND	3300
1,2,4-Trichlorobenzene	ND	3300
Isophorone	ND	3300
Naphthalene	74J	3300
Bis(2-chloroethoxy) methane	ND	3300
Hexachlorocyclopentadiene	ND	3300
2-Chloronaphthalene	ND	3300
Acenaphthylene	80J	3300
Acenaphthene	180J	3300
Dimethyl phthalate	ND	3300
2,6-Dinitrotoluene	ND	3300
Fluorene	190J	3300
4-Chlorophenyl phenyl ether	ND	3300
2,4-Dinitrotoluene	ND	3300
Diethylphthalate	ND	3300
N-Nitrosodiphenylamine	ND	3300
Hexachlorobenzene	ND	3300

KHOV006075

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

	Lab No. 69150	
	Client ID: 408-15	
	86.7% Solid	
	Units: ug/kg (Dry Weight)	Detection Limit
Parameter		Units: ug/kg
4-Bromophenyl phenyl ether	ND	3300
Phenanthrene	1100J	3300
Anthracene	240J	3300
Dibutyl phthalate	ND	3300
Fluoranthene	1600J	3300
Pyrene	1600J	3300
Benzidine	ND	6700
Butyl benzyl phthalate	ND	3300
Bis(2-ethylhexyl) phthalate	ND	3300
Chrysene	850J	3300
Benzo(a)anthracene	630J	3300
3,3'-Dichlorobenzidine	ND	6700
Di-n-octyl phthalate	ND	3300
Benzo(b)fluoranthene	570J	3300
Benzo(k)fluoranthene	480J	3300
Benzo(a)pyrene	560J	3300
Indeno(1,2,3-c,d)pyrene	400J	3300
Dibenzo(a,h)anthracene	85J	3300
Benzo(ghi)perylene	400J	3300
N-Nitrosodimethylamine	ND	3300

KHOV006076

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 408-15

Sample No.: 69150 Job No.: C007 Fraction: BN

Concentration Units: PPM

PPB

COMPOUND NAME	Retention Time	Estimated Conc.
1. <u>unknown alkane</u>	<u>13.44</u>	<u>1500</u>
2. <u>"</u>	<u>13.63</u>	<u>1500</u>
3. <u>C₁₃H₂₈ alkane</u>	<u>15.29</u>	<u>4200</u>
4. <u>2-butyl-1,1,3-trimethyl-Cyclohexane</u>	<u>15.45</u>	<u>1500</u>
5. <u>unknown alkane</u>	<u>16.34</u>	<u>2700</u>
6. <u>"</u>	<u>17.11</u>	<u>2300</u>
7. <u>"</u>	<u>18.09</u>	<u>3100</u>
8. <u>"</u>	<u>19.45</u>	<u>2300</u>
9. <u>unknown</u>	<u>20.82</u>	<u>1900</u>
10. <u>unknown alkane</u>	<u>22.20</u>	<u>2300</u>
11. <u>"</u>	<u>22.98</u>	<u>2300</u>
12. <u>"</u>	<u>24.35</u>	<u>1900</u>
13. <u>"</u>	<u>33.50</u>	<u>1500</u>
14. <u>"</u>	<u>36.15</u>	<u>1900</u>
15. <u>unknown</u>	<u>37.79</u>	<u>2700</u>
16. <u></u>	<u></u>	<u></u>
17. <u></u>	<u></u>	<u></u>
18. <u></u>	<u></u>	<u></u>
19. <u></u>	<u></u>	<u></u>
20. <u></u>	<u></u>	<u></u>
21. <u></u>	<u></u>	<u></u>
22. <u></u>	<u></u>	<u></u>
23. <u></u>	<u></u>	<u></u>
24. <u></u>	<u></u>	<u></u>
25. <u></u>	<u></u>	<u></u>

KHOV006077

JRS 007

JM SORCE, INC.

PROJECT NAME: HannanPROJECT No.: 92050

COLLECTED BY: _____

SIGNATURE: Robert H. HofferC.O.C. No.: 1579

CHAIN OF CUSTODY RECORD

SPL. No.	DATE SPLD.	TIME SPLD.	SAMPLING POINT AND SAMPLING METHOD DESCRIPTION	SAMPLE MATERIAL	ANALYSIS	REMARKS
403-1	7/6/92	1520	test pit: 3.0-3.5 ft	SOIL	PHC 69127	ECRA DELIVERABLES if PHC result is over 500ppm, then please run BA+
403-2	7/9/92	1147			PHC 69128	
403-3		1149			PHC 69129	
403-4		1150			PHC 69130	
403-5		1151			PHC 69131	
403-6		1152			PHC / VO+IS 69132	

RELINQUISHED BY	ORGANIZATION	DATE / TIME	RECEIVED BY	ORGANIZATION	DATE / TIME	REMARKS
<u>Robert H. Hoffer</u>	JM Sorce	9 July 92 3:48	<u>D. Dumble</u>	Envirotek	7/9/92 8:50	

C.O.C. #

KH0V006078

JO-607

C.O.C. 3B

PROJECT NAME: Hemorian

PROJECT No.: 92050

COLLECTED BY:

SIGNATURE: Abbas Vafar

JM SARGE, INC.

C.O.C. No.: 1574

CHAIN OF CUSTODY RECORD

SPL. No.	DATE SPID.	TIME SPID.	SAMPLING POINT AND SAMPLING METHOD DESCRIPTION	SAMPLE MATERIAL	ANALYSIS	REMARKS
403-7	7/7/92	1341	test pit: 1.5-2.0 ft	SOIL	PP+40	ECRA DELIVERABLES
403-8		1522	test pit: 2.5-4.0 ft		PHC	69133
403-9		1523	"		PHC	69134
403-10		1524	test pit: 3.5-4.0 ft		PHC	69135
403-11		1527	"		PHC	69136
403-12		1528	"		PHC	69137
				✓	PHC	69138

RELINQUISHED BY	ORGANIZATION	DATE / TIME	RECEIVED BY	ORGANIZATION	DATE / TIME	REMARKS
<u>Abbas Vafar</u>	<u>JM Sarge</u>	<u>9 July 92</u> <u>828</u>	<u>D. Dunge</u>	<u>Environment</u>	<u>7/6/92 8:50</u>	

KHOV006079

300 0001

PROJECT NAME: Hannan PROJECT No.: 92050 **JM SORGE, INC.**
COLLECTED BY: Adrian W. Hoff SIGNATURE: Adrian W. Hoff C.O.C. No.: 1576

CHAIN OF CUSTODY RECORD

SPL No.	DATE SPLD.	TIME SPLD.	SAMPLING POINT AND SAMPLING METHOD DESCRIPTION	SAMPLE MATERIAL	ANALYSIS	REMARKS
406-1	6/31/92	1330	test pit: 4.0-4.5'	SOIL	PHC 69139	ECRA DELIVERABLES
406-2	"	1345	test pit: 3.5-4.0'		PHC 69140	if PHC result is greater than 500 ppm, please run BAW
406-3	"	1500	test pit: 3.5-4.0'		PHC 69141	
407-1	7/2/92	1337	test pit: 3.5-4.0'		PP+40 69142	
407-2	"	1440	" 3.5-4.0'		PP+40 69143	

RELINQUISHED BY	ORGANIZATION	DATE / TIME	RECEIVED BY	ORGANIZATION	DATE / TIME	REMARKS
Adrian W. Hoff	JM SORGE	9 July 92 838	D. Dundee	Envirostat	7/9/92 8:50	

KHOV006080

JDS 0007

PROJECT NAME: Hannan

PROJECT No.: 92050

COLLECTED BY: _____

SIGNATURE: [Signature]

JM SORGE, INC.

CHAIN OF CUSTODY RECORD

C.O.C. No.: 1574

SPL. No.	DATE SPID.	TIME SPID.	SAMPLING POINT AND SAMPLING METHOD DESCRIPTION	SAMPLE MATERIAL	ANALYSIS	REMARKS
407-4	7/9/92	1030	last pit: 8.0-8.5 ft	SOIL	PHC	ECRA DELIVERABLES if PHC
407-5		1031	" 5.0-5.5 ft		PHC	result is greater than 500 ppm, please run BN+
407-6		1025	" 5.0-5.5 ft		PHC	
407-7		1326	" 5.0-5.5 ft		PHC	
407-8		1410	" 5.0-5.5 ft		PHC	

RELINQUISHED BY	ORGANIZATION	DATE / TIME	RECEIVED BY	ORGANIZATION	DATE / TIME	REMARKS
<u>[Signature]</u>	JM SORGE	7/9/92 838	<u>[Signature]</u>	Envirotech	7/9/92 8:30	

JOB COST

PROJECT NAME: Hamman PROJECT No.: 92030 **JM SORGE, INC.**
 COLLECTED BY: Edward Vesper SIGNATURE: Edward Vesper C.O.C. No.: 1574

CHAIN OF CUSTODY RECORD

SPL. No.	DATE SPID.	TIME SPID.	SAMPLING POINT AND SAMPLING METHOD DESCRIPTION	SAMPLE MATERIAL	ANALYSIS	REMARKS
408-16	7/2/92	1030	test pit: 5.0-3.5 ft	SOIL	PHC/VOL	ECRA DELIVERABLES
408-18	7/2/92	850	" : 9.0-8.5 ft		PHC/VOL	if PHC
408-13	7/8/92	900	test pit: 3.0-2.5 ft		PHC	resulf grade than 500 gpa
408-14	7/8/92	901	" : 2.5-2.0 ft		PHC	grade run 804

RELINQUISHED BY	ORGANIZATION	DATE / TIME	RECEIVED BY	ORGANIZATION	DATE / TIME	REMARKS
<u>Edward Vesper</u>	JM SORGE	9 July 92 838	Dilulice	Envirostat	7/4/92 8:50	

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006083

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

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ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 7/7/92
DATE RECEIVED 7/9/92
JOB No. C 007

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(908) 549-3900

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(908) 549-3900

CLIENT Sorge
MATRIX Soil
SAMPLE No. 69132

DATE SAMPLED 7/7/92
DATE RECEIVED 7/9/92
JOB No. C007

Analyst's _____ QA

SAMPLE No.	Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
	PHC	7/9/92	OL	7/10/92	MD	2369
	VUA ^{tr5}			7/14/92	CC	2124
	BN+15	7/15/92	SS	7/16/92	JP	1850

KHOV006088

LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(201) 549-3900

CLIENT Sorge DATE SAMPLED 7/7/92
MATRIX Soil DATE RECEIVED 7/9/92
SAMPLE No. 69133 JOB No. C007

Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
VOA ⁺			7/14/92	CC	2124
ABN ⁺	7-17-92	SS	7/16/92	JP	1850
PCB/Pest.	7-10-92	KS	7-28-92	ARM	1888
Antimony	7/16/92	BT	7/17/92 1253	JM	1967
Beryllium					
Cadmium					
Chromium					
Copper					
Nickel					
Silver					
Zinc					
Mercury			7/10/92	BT	
Arsenic			7/27/92 1900	JB	
Lead			7/17/92 1253	JM	
Selenium			7/24/92 0148	JB	
Thallium			7/24/92 1665		
Cyanide	7/13/92	DD	7/27/92	DD	1209
Phenols	7/13/92	RR	7/22/92	RR	1194

KHOV006089

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

<u>SAMPLE No.</u>	<u>Extraction Date/Time</u>	<u>Extractor's Initials</u>	<u>Analysis Date/Time</u>	<u>Analyst's Initials</u>	<u>QA Batch No.</u>
<u>PHC</u>	<u>7/10/92</u>	<u>DL</u>	<u>7/14/92</u>	<u>MD</u>	<u>2370</u>

KNOV006090

ENVIROTECH RESEARCH, INC.
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[illegible]

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KH0V006093

ENVIROTECH RESEARCH, INC.
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[illegible]

KHOV006094

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/3/92
DATE RECEIVED 7/9/92
JOB No. C007

KHOV006095

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006096

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 6/3/92

DATE RECEIVED 7/9/92

JOB No. C007

KHOV006097

LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(201) 549-3900

CLIENT Sorge DATE SAMPLED 7/2/92
MATRIX Soil DATE RECEIVED 7/9/92
SAMPLE No. 69142 JOB No. C007

Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
VOA ⁺			7/14/92	CC	2124
ABN ⁺	7-17-92	SS	7/22/92	LD	1850
PCB/Pest.	7-10-92	KS	7-28-92	RRM	1888
Antimony	7/16/92	BT	7/17/92 1301	JM	1967
Beryllium					
Cadmium					
Chromium					
Copper					
Nickel					
Silver					
Zinc					
Mercury			7/16/92	BT	
Arsenic			7/22/92 1812	WB	
Lead			7/17/92 1301	TM	
Selenium			7/24/92 0201	WB	
Thallium			7/24/92 1230		
Cyanide	7/10/92	DD	7/27/92	DD	1209
Phenols	7/13/92	RL	7/27/92	RL	1194

KHOV006098

LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(201) 549-3900

CLIENT Sorge DATE SAMPLED 7/2/92
MATRIX Soil DATE RECEIVED 7/9/92
SAMPLE No. 69143 JOB No. C007

Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
VOA +			7/14/92	CC	2124
ABN +	7-17-92	SS	7/22/92	LD	1850
PCB/Pest.	7-10-92	ES	7-28-92	RRM	1888
Antimony	7/16/92	BT	7/17/92 1309	JM	1967
Beryllium					
Cadmium					
Chromium					
Copper					
Nickel					
Silver					
Zinc					
Mercury			7/16/92	BT	
Arsenic			7/27/92 1525	UB	
Lead			7/17/92 1309	JM	
Selenium			7/24/92 0215	UB	
Thallium			7/26/92 1242		
Cyanide	7/13/92	SS	7/27/92	DD	1209
Phenols	7/22/92	RR	7/22/92	RR	1199

KHOV006099

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006100

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777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006101

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

<u>Sample No.</u>	<u>Extraction Date/Time</u>	<u>Extractor's Initials</u>	<u>Analysis Date/Time</u>	<u>Analyst's Initials</u>	<u>QA Batch No.</u>
<u>PHC</u>	<u>7/10/92</u>	<u>DL</u>	<u>7/14/92</u>	<u>MD</u>	<u>2370</u>

KHOV006102

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 7/8/92
DATE RECEIVED 7/9/92
JOB No. C 007

KHOV006103

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006104

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006105

ENVIROTECH RESEARCH, INC.
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(908) 549-3900

[illegible]

KHOV006106

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006107

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006108

ENVIROTECH RESEARCH, INC.

777 New Durham Road
Edison, New Jersey 08817
Tel: (908) 549-3900
Fax: (908) 549-3679

CHECKED IN 8/13/92

DATA ENTERED _____

August 13, 1992

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. C022 - Hovnanian

Dear Mr. Finley:

Enclosed are the results you requested for the following samples taken 7/9/92 & 7/10/92:

<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Requested</u>
69339	B406-1	PHC
69340	B406-2	PHC
69341	B406-3	PHC
69342	B406-4	PHC
69343	B406-5	PHC
69344	B406-6	PP Metals & PHC
69345	B406-7	PHC
69346	B406-8	PHC
69347	B406-9	PP Metals & PHC
69348	B408-16	PHC
69349	B408-17	PHC
69350	B408-18	PHC
69351	B407-9	PHC
69352	B408-19	VOA +15, BN +15 & PHC
69353	B409-8	VOA +15 & PHC
69354	B408-20	PHC
69355	B408-21	PHC
69356	B408-22	PHC
69357	B408-23	PHC
69358	B408-24	PHC
69359	408-PS	PP +40
69360	B409-1	PHC

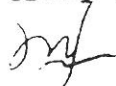
KHOV006109

ENVIROTECH RESEARCH, INC.

<u>Lab No.</u>	<u>Client ID</u>	<u>Analysis Requested</u>
69361	B409-2	PHC
69362	B409-3	PHC
69363	B409-4	PHC
69364	B409-5	PHC
69365	B409-6	PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,



Michael J. Urban
Laboratory Manager

KHOV006110

TABLE OF CONTENTS

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GC/EC - Raw Data	7
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KHOV006111

ENVIROTECH RESEARCH, INC.

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Appendix A, page 52, and analyzed by U.S. EPA Method 418.1.

KHOV006112

ENVIROTECH RESEARCH, INC.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Atomic
Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

Element	Water Test Method		Solid Test Method	
	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

KHOV006113

ENVIROTECH RESEARCH, INC.

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Method 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040
Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4
respectively for hydrogen cyanide
and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846
3rd Edition, November 1986.

- Standard Methods for the Examination of Water and Wastewater, 17th Edition.

- Methods for Chemical Analysis of Water and Wastes,
EPA-600/4-79-020, 1979.

KHOV006114

DATA REPORTING QUALIFIERS

- ND - The compound was not detected at the indicated concentration.

- J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.

- B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

KHOV006115

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2371

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	Petroleum Hydrocarbons	
		% Solid	mg/kg (Dry Wt.)
69339	B406-1	92.1	ND
69340	B406-2	85.2	210
69341	B406-3	89.1	25
69342	B406-4	88.5	ND
69343	B406-5	89.5	ND
69344	B406-6	88.3	54
69345	B406-7	87.8	ND
69346	B406-8	91.5	ND
69347	B406-9	90.7	ND
69348	B408-16	86.0	60
69349	B408-17	86.3	30
69350	B408-18	86.0	ND
69351	B407-9	90.4	ND
69352	B408-19	83.8	1690
69353	B409-58	76.0	37
69354	B408-20	87.2	ND
69355	B408-21	85.7	ND
69356	B408-22	84.2	26
69357	B408-23	83.7	ND

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

KHOV006116

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2372

PETROLEUM HYDROCARBONS

<u>Envirotech Sample #</u>	<u>Client ID</u>	<u>% Solid</u>	<u>Petroleum Hydrocarbons mg/kg (Dry Wt.)</u>
69358	B408-24	85.2	ND
69359	408-P5	88.6	ND
69360	B409-1	84.6	ND
69361	B409-2	87.8	ND
69362	B409-3	86.8	ND
69363	B409-4	85.9	ND
69364	B409-5	82.6	ND
69365	B409-6	85.7	ND

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

KHOV006117

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1967

METALS

Lab No. 69344 Client ID: B406-6 88.3% Solid			
<u>Parameter</u>	<u>Units: mg/kg (Dry Weight)</u>	<u>Detection Limit Units: mg/kg</u>	<u>Method Code</u>
Antimony	ND	6.0	P
Arsenic	2.4	0.5	F
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	26.7	1.0	P
Copper	58.3	2.5	P
Lead	209	5.0	P
Mercury	1.40	0.1	CV
Nickel	25	4.0	P
Selenium	0.78	0.5	F
Silver	ND	1.0	P
Thallium	ND	0.5	F
Zinc	134	2.0	P

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

KHOV006118

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1967

METALS

Lab No. 69347			
Client ID: B406-9			
90.7% Solid			
<u>Parameter</u>	<u>Units: mg/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: mg/kg</u>	<u>Method Code</u>
Antimony	ND	6.0	P
Arsenic	ND	0.5	F
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	13.4	1.0	P
Copper	22	2.5	P
Lead	ND	5.0	P
Mercury	ND	0.1	CV
Nickel	14	4.0	P
Selenium	ND	0.5	F
Silver	ND	1.0	P
Thallium	ND	0.5	F
Zinc	32.4	2.0	P

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

KHOV006119

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2132A

VOLATILE ORGANICS

Lab No. 69352 Client ID: B408-19 83.8% Solid			Detection Limit	
Units: ug/kg (Dry Weight)			Units: ug/kg	
Parameter				
	ND		5.0	
Benzene	ND		5.0	
Bromodichloromethane	ND		5.0	
Bromoform	ND		10	
Bromomethane	ND		5.0	
Carbon tetrachloride	ND		5.0	
Chlorobenzene	ND		10	
Chloroethane	ND		10	
2-Chloroethylvinyl ether	ND		5.0	
Chloroform	ND		10	
Chloromethane	ND		5.0	
Dibromochloromethane	ND		5.0	
1,1-Dichloroethane	ND		5.0	
1,2-Dichloroethane	ND		5.0	
1,1-Dichloroethene	ND		5.0	
trans-1,2-Dichloroethene	ND		5.0	
1,2-Dichloropropane	ND		5.0	
cis-1,3-Dichloropropene	ND		5.0	
trans-1,3-Dichloropropene	ND		5.0	
Ethyl benzene	ND		5.0	
Methylene chloride	5.8B		5.0	
1,1,2,2-Tetrachloroethane	ND		5.0	
Tetrachloroethene	ND		5.0	
Toluene	ND		5.0	
1,1,1-Trichloroethane	36B		5.0	
1,1,2-Trichloroethane	ND		5.0	
Trichloroethene	ND		5.0	
Trichlorofluoromethane	ND		10	
Vinyl chloride	ND		5.0	
Xylenes (Total)	ND			

KHOV006120

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 408-19

Sample No.: 69352 Job No.: 0022 Fraction: VOC

Concentration Units: PPM PPB

COMPOUND NAME		Retention Time	Estimated Conc.
1.	C ₁₀ H ₁₆ hydrocarbon	24.42	13
2.	C ₉ H ₈ "	28.36	19
3.	C ₁₀ H ₂₀ "	29.95	20
4.	unknown	30.47	10
5.	"	31.28	16
6.	"	35.01	17
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			

KHOV006121

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69352		
Client ID: B408-19		
83.8% Solid		
Units: ug/kg (Dry Weight)		Detection Limit
Parameter		Units: ug/kg
1,3-Dichlorobenzene	ND	8300
1,4-Dichlorobenzene	ND	8300
Hexachloroethane	ND	8300
Bis(2-chloroethyl) ether	ND	8300
1,2-Dichlorobenzene	ND	8300
Bis(2-chloroisopropyl) ether	ND	8300
N-Nitrosodi-n-propylamine	ND	8300
Nitrobenzene	ND	8300
Hexachlorobutadiene	ND	8300
1,2,4-Trichlorobenzene	ND	8300
Isophorone	1100J	8300
Naphthalene	ND	8300
Bis(2-chloroethoxy) methane	ND	8300
Hexachlorocyclopentadiene	ND	8300
2-Chloronaphthalene	ND	8300
Acenaphthylene	1600J	8300
Acenaphthene	ND	8300
Dimethyl phthalate	ND	8300
2,6-Dinitrotoluene	1300J	8300
Fluorene	ND	8300
4-Chlorophenyl phenyl ether	ND	8300
2,4-Dinitrotoluene	ND	8300
Diethylphthalate	ND	8300
N-Nitrosodiphenylamine	ND	8300
Hexachlorobenzene	ND	8300

KHOV006122

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

	Lab No. 69352	
	Client ID: B408-19	
	83.8% Solid	
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
4-Bromophenyl phenyl ether	ND	8300
Phenanthrene	15000	8300
Anthracene	2200J	8300
Dibutyl phthalate	ND	8300
Fluoranthene	17000	8300
Pyrene	14000	8300
Benzidine	ND	17000
Butyl benzyl phthalate	ND	8300
Bis(2-ethylhexyl) phthalate	ND	8300
Chrysene	7600J	8300
Benzo(a)anthracene	5800J	8300
3,3'-Dichlorobenzidine	ND	17000
Di-n-octyl phthalate	ND	8300
Benzo(b)fluoranthene	4800J	8300
Benzo(k)fluoranthene	4700J	8300
Benzo(a)pyrene	1400J	8300
Indeno(1,2,3-c,d)pyrene	1900J	8300
Dibenzo(a,h)anthracene	510J	8300
Benzo(ghi)perylene	1700J	8300
N-Nitrosodimethylamine	ND	8300

KHOV006123

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: T408-19

Sample No.: 69352 Job No.: C022

Fraction: BN

Concentration Units: PPM

PPB

COMPOUND NAME		Retention Time	Estimated Conc.
1.	unknown	27.76	4000
2.	C20H12 PAH	35.13	4000
3.	"	35.25	4000
4.			
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KHOV006124

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2132A

VOLATILE ORGANICS

Lab No. 69353		
Client ID: B409-5		
76.0% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
Benzene	ND	5.0
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	10
2-Chloroethylvinyl ether	ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Ethyl benzene	ND	5.0
Methylene chloride	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
1,1,1-Trichloroethane	2.7JB	5.0
1,1,2-Trichloroethane	ND	5.0
Trichloroethene	ND	5.0
Trichlorofluoromethane	ND	5.0
Vinyl chloride	ND	10
Xylenes (Total)	ND	5.0

KHOV006125

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 409-5

Sample No.: 69353 Job No.: C022 Fraction: VOC

Concentration Units: PPM PPB

COMPOUND NAME	Retention Time	Estimated Conc.
1. NO VOLATILE ORGANICS COMPOUNDS FOUND CC		
2.		
3.		
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KHOV006126

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 408-P5

Sample No.: 69359 Job No.: C022 Fraction: VOC

Concentration Units: PPM PPB

COMPOUND NAME	Retention Time	Estimated Conc.
1. NO VOLATILE ORGANICS COMPOUNDS FOUND CC		
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KHOV006127

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

ACID EXTRACTABLES

Lab No. 69359		
Client ID: 408-PS		
88.6% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: ug/kg</u>
2-Chlorophenol	ND	330
2-Nitrophenol	ND	330
Phenol	ND	330
2,4-Dimethylphenol	ND	330
2,4-Dichlorophenol	ND	330
2,4,6-Trichlorophenol	ND	330
4-Chloro-3-methylphenol	ND	1700
2,4-Dinitrophenol	ND	1700
2-Methyl-4,6-dinitrophenol	ND	1700
Pentachlorophenol	ND	1700
4-Nitrophenol	ND	1700

KHOV006128

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69359 Client ID: 408-PS 88.6% Solid		
<u>Parameter</u>	<u>Units: ug/kg (Dry Weight)</u>	<u>Detection Limit Units: ug/kg</u>
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl) ether	ND	330
N-Nitrosodi-n-propylamine	ND	330
Nitrobenzene	ND	330
Hexachlorobutadiene	ND	330
1,2,4-Trichlorobenzene	ND	330
Isophorone	ND	330
Naphthalene	27J	330
Bis(2-chloroethoxy) methane	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Acenaphthylene	60J	330
Acenaphthene	31J	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	38J	330
4-Chlorophenyl phenyl ether	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

KHOV006129

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

Parameter	Lab No. 69359 Client ID: 408-PS 88.6% Solid		Detection Limit
	Units: ug/kg (Dry Weight)		Units: ug/kg
4-Bromophenyl phenyl ether	ND		330
Phenanthrene	720		330
Anthracene	140J		330
Dibutyl phthalate	97J		330
Fluoranthene	1400		330
Pyrene	1800		670
Benzidine	ND		330
Butyl benzyl phthalate	ND		330
Bis(2-ethylhexyl) phthalate	110J		330
Chrysene	1000		330
Benzo(a)anthracene	830		670
3,3'-Dichlorobenzidine	ND		330
Di-n-octyl phthalate	ND		330
Benzo(b)fluoranthene	930		330
Benzo(k)fluoranthene	760		330
Benzo(a)pyrene	850		330
Indeno(1,2,3-c,d)pyrene	780		330
Dibenzo(a,h)anthracene	240J		330
Benzo(ghi)perylene	710		330
N-Nitrosodimethylamine	ND		330

KHOV006130

ENVIROTECH RESEARCH, INC.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 408-PS

Sample No.: 69359 Job No.: C022 Fraction: BNA

Concentration Units: PPM (PPB)

	COMPOUND NAME	Retention Time	Estimated Conc.
1.	C ₁₅ H ₁₀ /C ₁₅ H ₁₂ COELUTING PAH	27.91	220
2.	9,10-ANTHRACENEDIONE	28.57	220
3.	DIMETHYL PHENANTHRENE ISOMER	29.39	150
4.	BENZO[b]NAPHTHO[2,3-d]FURAN	30.87	300
5.	C ₁₇ H ₁₂ PAH	31.57	640
6.	"	32.15	410
7.	C ₁₄ H ₁₀ CL ₄	33.02	220
8.	UNKNOWN	33.18	410
9.	BENZO[b]NAPHTHO[2,1-d]THIOPHENE	33.49	300
10.	C ₁₅ H ₁₀ /C ₁₅ H ₁₂ COELUTING PAH	33.61	300
11.	C ₁₇ H ₁₂ O	33.82	220
12.	C ₁₈ H ₁₄ PAH	35.55	300
13.	UNKNOWN ALKANE	36.22	640
14.	C ₂₀ H ₁₂ PAH	37.72	530
15.	UNKNOWN ALKANE	38.05	1,000
16.	C ₂₀ H ₁₂ PAH	38.19	980
17.	UNKNOWN	39.02	410
18.	"	39.38	340
19.	UNKNOWN ALKANE	40.13	830
20.	UNKNOWN	41.41	530
21.	C ₂₂ H ₁₂ PAH	41.70	340
22.	UNKNOWN	43.95	640
23.	"	46.59	340
24.			
25.			

KHOV006131

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

<u>Parameter</u>	Lab No. 69159 Client ID: 408-PS 88.6% Solid		Detection Limit
	<u>Units: ug/kg (Dry Weight)</u>		<u>Units: ug/kg</u>
Aldrin	ND		16
alpha-BHC	ND		16
beta-BHC	ND		16
delta-BHC	ND		16
gamma-BHC (Lindane)	ND		16
Chlordane	ND		160
4,4'-DDD	ND		32
4,4'-DDE	41		32
4,4'-DDT	420		32
Dieldrin	ND		32
Endosulfan I	ND		16
Endosulfan II	ND		32
Endosulfan sulfate	ND		32
Endrin	ND		32
Endrin aldehyde	ND		16
Heptachlor	ND		16
Heptachlor epoxide	ND		320
Toxaphene	ND		160
PCB-1016	ND		160
PCB-1221	ND		160
PCB-1232	ND		160
PCB-1242	ND		160
PCB-1248	ND		160
PCB-1254	ND		160
PCB-1260	ND		160

KHOV006132

ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69359			
Client ID: 408-PS			
88.6% Solid			
<u>Parameter</u>	<u>Units: mg/kg (Dry Weight)</u>	<u>Detection Limit</u> <u>Units: mg/kg</u>	<u>Method Code</u>
Antimony	ND	6.0	P
Arsenic	5.48	0.5	F
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	20.9	1.0	P
Copper	33.7	2.5	P
Lead	1200	5.0	P
Mercury	1.39	0.1	CV
Nickel	19	4.0	P
Selenium	ND	0.5	F
Silver	ND	1.0	P
Thallium	ND	5.0	F
Zinc	451	2.0	P
Cyanide	ND	1.0	
Phenols	ND	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

KHOV006133

JM Sage Inc
 NAME OF CLIENT (FOR REPORT AND BILLING)
 50 County Line Rd
 ADDRESS
 Middletown NJ
 CITY STATE ZIP
 Chris Flaherty
 ATTENTION
 248-0066
 PHONE

CHAIN-OF-CUSTODY RECORD

ENVIROTECH RESEARCH, INC.
 777 NEW DURHAM ROAD
 EDISON, N.J. 08817
 (908) 548-3800

JMS COC 1578
 0022
 ENVIROTECH JOB NO.

PROJECT NAME

DATE SMPLED.	TIME SMPLED.	SMPD. BY	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	ENVIROTECH SAMPLE NUMBER
3/9/92	1113	AM	SOIL		1	B406-1: test boring 8.5-6.0	PHC	69339
	1141					B406-2: 10.0-10.5	PHC	69340
	1309					B406-3: 6.0-6.5	PHC	69341
	1335					B406-4: 10.5-11.0	PHC	69342
	1400					B406-5: 9.0-9.5	PHC	69343
	1416					B406-6: 9.0-9.5	PHC/PPM	69344
	1441					B406-7: 5.5-6.0	PHC	69345
	1500					B406-8: 10.0-10.5	PHC	69346
3/10/92	1412					B406-9: 10.5-11.0	PHC/PPM	69347

KHOV006134

TOTAL NO. OF CONTAINERS: 9
 SPECIAL INSTRUCTIONS: (ECLA) IF PHC > 500 ppm, please run GAT

1. RELINQUISHED BY: Chris Flaherty	DATE/TIME 10 30 4 1605	1. RECEIVED BY: Mickala	DATE/TIME 7/10/92	3. RECEIVED BY:
2. RELINQUISHED BY:	DATE/TIME	2. RECEIVED BY:	DATE/TIME	4. RECEIVED BY:

NAME OF CLIENT NAME OF CLIENT (FOR REPORT AND BILLING)

ADDRESS
Somerville, N.J. 08876

CITY STATE ZIP

ATTENTION: Chris Flory

218.0066

PHONE

JMS CDC 1578
ENVIROTECH JOB NO. C022
K. HOVANNIAN - NEWARK
PROJECT NAME

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817

(908) 540-3880

DATE SMPLD.	TIME SMPLD.	SMPLD. BY	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	ENVIROTECH SAMPLE NUMBER
7/9/92	11:20	TB	SOIL		1	Trench 408-16; 4 ft.	PAC	69348
	11:25				1	Trench 408-17; 4 ft.		69349
	13:45				1	Trench 408-18; 4 ft.	↓	69350
7/10/92					1	Trench 407-9; 5 ft.	PAC	69351
					2	Trench 408-19; 5 ft.	PAC, VO	69352
		↓	↓		2	Trench 409-B; 3 ft.	PAC, VO	69353

KH0V006135

KHOV006135

TOTAL NO. OF CONTAINERS: 8

SPECIAL INSTRUCTIONS: ECRA, if PTC > 500 ppm, please run BN+.

1. RELINQUISHED BY: <i>Robert Koffman</i>	DATE/TIME 7/10-92	1. RECEIVED BY: <i>D. K. (CA)</i>	DATE/TIME 7/10/92 4:10	3. RELINQUISHED BY:	DATE/TIME -	3. RECEIVED BY:
2. RELINQUISHED BY:	DATE/TIME -	2. RECEIVED BY:		4. RELINQUISHED BY:	DATE/TIME -	4. RECEIVED BY:

J.D. Serge, Inc.
NAME OF CLIENT (FOR REPORT AND BILLING)
50 County Line Rd.
ADDRESS
Jamestown MS.
CITY STATE ZIP
ATTENTION Chris Finley
218-0066
PHONE

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817

10081549-3000

JMS 702 1578
C022

ENVIROTECH JOB NO. 5
V. Hansen, Newark

PROJECT NAME

DATE SMPLED.	TIME SMPLED.	SMPLED. BY	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	ENVIROTECH SAMPLE NUMBER
3/10/92	1144	AH	SOIL	-	1	8408-20: 10.5-11.0	PHC	69354
	1310					8408-21: "		69355
	1327					8408-22: "		69356
	1338					8408-23: "		69357
	1447					8408-24: "		69358
	1153				3	8408-P5	PP+40	69359

KHOV006136

TOTAL NO. OF CONTAINERS: 8
ECLA / IF PHC > 300 ppm, please run BALT
IONS:

SPECIAL INSTRUCTIONS:

SPECIAL INSTRUCTIONS: <u>ECRA / if PHC > 300 ppm, please use...</u>			
1. RELINQUISHED BY: <i>Shah Nafar</i>	DATE/TIME <u>10 JUL 16 05</u>	1. RECEIVED BY: <i>D. L. L.</i>	1. RECEIVED BY: <u>7/11/12</u> <u>4:00</u>
2. RELINQUISHED BY:	DATE/TIME <u>-</u>	2. RECEIVED BY:	2. RECEIVED BY:
3. RELINQUISHED BY:	DATE/TIME <u>-</u>	3. RELINQUISHED BY:	3. RECEIVED BY:
4. RELINQUISHED BY:	DATE/TIME <u>-</u>	4. RELINQUISHED BY:	4. RECEIVED BY:

CHAIN-OF-CUSTODY RECORD

JMS C0C 1578

ENVIROTECH JOB NO. C022

K. Hovnanian, Newark

PROJECT NAME

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817

(908) 548-3888

NAME OF CLIENT: JMS Corp., Inc.
IFOR REPORT AND BILLING:
50 County Line Rd.
ADDRESS:
City: Somerville, N.J.
STATE: N.J.
ZIP:
ATTENTION: Chris Finkley
213-0066
PHONE:

DATE SMPLED.	TIME SMPLED.	SMPLED. BY	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	ENVIROTECH SAMPLE NUMBER
7/10/92	924	AM	SOIL	-	1	8409-1 10.5-11.0	P4C	69360
	934					8409-2		69361
	1003					8409-3		69362
	1025					8409-4		69363
	1105					8409-5		69364
	1123					8409-6		69365
							if P4C > 500 ppm, please	
							run BAC+	

KHOV006137

TOTAL NO. OF CONTAINERS: 6

SPECIAL INSTRUCTIONS: R29A

1. RELINQUISHED BY: <i>Adap 4/10/92</i>	DATE/TIME: 10/30/92 1605	1. RECEIVED BY: <i>William 7/10/92</i>	3. RELINQUISHED BY:	DATE/TIME: -	3. RECEIVED BY:
2. RELINQUISHED BY:	DATE/TIME: -	2. RECEIVED BY:	4. RELINQUISHED BY:	DATE/TIME: -	4. RECEIVED BY:

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

SAMPLE No.	Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
81551	PHC	7/13/92	DL	7/15/92	MD	2371

KHOV006138

KNOV006138

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 7/09/92
DATE RECEIVED 7/10/92
JOB No. C022

KHOV006139

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

SAMPLE No.	Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
61511	PHC	7/13/92	DL	7/15/92	MD	2371

KHOV006140

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 7/09/92
DATE RECEIVED 7/10/92
JOB No. C022

KHOV006141

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006142

LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

CLIENT Sorge
MATRIX Soil
SAMPLE No. 69344

DATE SAMPLED 7/9/92
DATE RECEIVED 7/10/92
JOB No. C022

Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
<u>Antimony</u>	<u>7/16/92</u>	<u>BT</u>	<u>7/17/92 1317</u>	<u>JM</u>	<u>1967</u>
<u>Beryllium</u>					
<u>Cadmium</u>					
<u>Chromium</u>					
<u>Copper</u>					
<u>Nickel</u>					
<u>Silver</u>					
<u>Zinc</u>					
<u>Lead</u>					
<u>Arsenic</u>			<u>7/27/92 1837</u>	<u>MB</u>	
<u>Selenium</u>			<u>7/26/92 0242</u>		
<u>Thallium</u>			<u>7/28/92 1306</u>		
<u>Mercury</u>			<u>7/16/92</u>	<u>BT</u>	
<u>PHC</u>	<u>7/13/92</u>	<u>OL</u>	<u>7/15/92</u>	<u>MD</u>	<u>2371</u>

KHOV006143

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 7/09/92
DATE RECEIVED 7/10/92
JOB No. C022

KHOV006144

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

[illegible]

KHOV006145

LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.
 777 NEW DURHAM ROAD, EDISON, NJ 08817
 (908) 549-3900

CLIENT Sorge
 MATRIX Soil
 SAMPLE No. 69347

DATE SAMPLED 7/10/92
 DATE RECEIVED 7/10/92
 JOB No. C022

Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
<u>Antimony</u>	<u>7/10/92</u>	<u>BT</u>	<u>7/17/92 1326</u>	<u>JM</u>	<u>1967</u>
<u>Beryllium</u>					
<u>Cadmium</u>					
<u>Chromium</u>					
<u>Copper</u>					
<u>Nickel</u>					
<u>Silver</u>					
<u>Zinc</u>					
<u>Lead</u>					
<u>Arsenic</u>			<u>7/22/92 2203</u>	<u>JM</u>	
<u>Selenium</u>			<u>7/23/92 0256</u>		
<u>Thallium</u>			<u>7/23/92 1719</u>		
<u>Mercury</u>			<u>7/16/92</u>	<u>BT</u>	
<u>PHC</u>	<u>7/13/92</u>	<u>DL</u>	<u>7/15/92</u>	<u>MO</u>	<u>2371</u>

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(908) 549-3900

DATE SAMPLED 7/09/92
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JOB No. C022

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777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

SAMPLE No.	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
61511	7/13/92	DL	7/15/92	MD	2371

[illegible]

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(908) 549-3900

DATE SAMPLED 7/9/92
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JOB No. C022

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<u>Sample No.</u>	<u>Extraction Date/Time</u>	<u>Extractor's Initials</u>	<u>Analysis Date/Time</u>	<u>Analyst's Initials</u>	<u>QA Batch No.</u>
61531	7/13/92	DL	7/15/92	MD	2371

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DATE SAMPLED 7/10/92
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JOB No. C022

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(908) 549-3900

SAMPLE No.	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	DL	7/15/92	MD	2371
VOA			7/24/92	CC	2132

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JOB No. C022

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777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

SAMPLE No.	Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
81552	PHC	7/13/92	DL	7/15/92	MO	2371

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(908) 549-3900

DATE SAMPLED 7/10/92
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JOB No. C022

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(908) 549-3900

<u>Analytic Parameter</u>	<u>Extraction Date/Time</u>	<u>Extractor's Initials</u>	<u>Analysis Date/Time</u>	<u>Analyst's Initials</u>	<u>QA Batch No.</u>
PHC	7/14/92	DL	7/15/92	MO	2371

KHOV006156

LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.
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(908) 549-3900

CLIENT Sorge
MATRIX Soil
SAMPLE No. 69358

DATE SAMPLED 7/10/92
DATE RECEIVED 7/10/92
JOB No. C022

[illegible]

KH0V006157

LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(201) 549-3900

CLIENT Sorge DATE SAMPLED 7/10/92
MATRIX Soil DATE RECEIVED 7/10/92
SAMPLE No. 69359 JOB No. C022

Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
VOA			7/24/92	CC	2132
ABN	7-17-92	SS	7/24/92	PE	1850
PCB/Pest.	7-13-92	GR	7-24-92	RRM	1888
Antimony	7/16/92	BT	7/17/92 1350	JM	1967
Beryllium					
Cadmium					
Chromium					
Copper					
Nickel					
Silver					
Zinc			7/16/92	BT	
Mercury			7/26/92 855	UB	
Arsenic			7/10/92 1350	JM	
Lead			7/23/92 0317	UB	
Selenium			7/24/92 1645	J	
Thallium					
Cyanide	7/20/92	RR	7/20/92	RR	1209
Phenols	7/22/92	RR	7/22/92	RR	1194

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DATE SAMPLED 7/10/92
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ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 7/10/92
DATE RECEIVED 7/10/92
JOB No. C022

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ENVIROTECH RESEARCH, INC.
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(908) 549-3900

DATE SAMPLED 7/10/92
DATE RECEIVED 7/10/92
JOB No. C022

KNOV006161

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 7/10/92
DATE RECEIVED 7/10/92
JOB No. C022

KHOV006162

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

DATE SAMPLED 7/10/92
DATE RECEIVED 7/10/92
JOB No. C022

KHOV006163

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

SAMPLE No. <u> </u>		Analysis		Analyst's	QA
Analytic	Extraction	Extractor's	Date/Time	Initials	Batch No.
Parameter	Date/Time	Initials			
<u>PHC</u>	<u>7/14/92</u>	<u>DL</u>	<u>7/15/92</u>	<u>MD</u>	<u>2372</u>

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KHOV006164

APPENDIX C

STANDARD SAMPLING PROCEDURES

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TRAILER-MOUNTED AUGER SAMPLING PROCEDURES

Soil borings were made using a trailer-mounted, solid stem auger rig. Soil samples were collected by standard hand auger techniques in the following manner.

Equipment:

- o Trailer mounted solid stem auger rig;
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon-lined screw caps;
- o Sample cooler/ice packs;
- o Bentonite pellets.

Procedure:

- 1) A trailer-mounted solid stem auger rig will be used to advance the boring to a point above the desired sampling depth;
- 2) The soil materials encountered during the boring will be logged by the geologist as they are brought to the surface;
- 3) The auger will be placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger will be scrubbed clean using analconox and distilled water mixture. After scrubbing, the auger will be rinsed with thealconox/water mixture and then rinsed again with distilled water. The auger will be rinsed with acetone to remove any residual materials, then air dried, then given a final rinse with distilled water.
- 4) A clean auger (the second) will be used to collect the soil from the sample zone. The auger will be advanced one foot and brought to the surface.

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- 5) The soil will be removed from the auger. Only the interior portion (3 to 4 inches) of the soil will be collected for later analysis. The top and the bottom of the sample will be discarded. A portion of the sample will be set aside for field analysis.
- 6) The soil sample for laboratory analyses will be placed in a wide-mouth amber jar or septum vials with a teflon-lined screw cap. A sample label will be prepared showing the sample number, depth of collection, date, and analysis to be conducted. A Chain-Of-Custody control form will also be prepared.
- 7) The soil sample bottles will be placed in a storage cooler at 4° C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples will be refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis will be decontaminated using the procedure detailed in Item 3 above.
- 9) At the completion of the boring, the bore hole will be backfilled with bentonite.

KHOV006167

TRUCK MOUNTED AUGER SAMPLING PROCEDURES

Soil borings were advanced using a truck mounted, solid stem auger rig. Soil samples were collected by standard hand auger techniques in the following manner:

Equipment:

- o Truck mounted sold stem auger rig;
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two (2) plastic spray applicators;
- o Wide-mouth, amber glass jars and septum vials with teflon-lined screw caps;
- o Sample cooler/ice packs;
- o Bentonite pellets.

Procedure:

- 1) A truck-mounted, solid stem auger rig was used to advance the boring to a point above the desired sampling depth;
- 2) The soil materials encountered during the boring were logged by the geologist as they were brought to the surface;
- 3) The auger was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger was scrubbed clean using analconox and distilled water mixture. After scrubbing, the auger was rinsed with thealconox/water mixture and then rinsed again with distilled water. The auger was rinsed with acetone to remove any residual materials then air dried, and given a final rinse with distilled water.

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- 4) A clean auger (the second) was used to collect the soil from the sample zone. The auger was advanced one foot and brought to the surface.
- 5) The soil was removed from the auger. Only the interior portion (3 to 4 inches) of the soil was collected for later analysis. The top and bottom of the sample was discarded. A portion of the sample was set aside for field analysis.
- 6) The soil sample for laboratory analyses was placed in a wide-mouth amber jar or septum vials with a teflon-lined screw cap. A sample label was prepared showing the sample number, depth of collection, date, and analysis conducted. A Chain-of-Custody control form was also prepared.
- 7) The soil sample bottles were placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, NJ. (The samples were refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis was decontaminated using the procedure detailed in Item 3 above.
- 9) At the completion of the boring, the bore hole was backfilled with bentonite.

KHOV006169

HAND AUGER BORING AND SAMPLE COLLECTION

Soil borings were made and samples collected from the all hand auger bore holes in the following manner:

Equipment:

- o Two, 4-inch O.D. stainless steel hand augers (AMS manufacture);
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon-lined screw caps;
- o Sample cooler/ice packs;
- o Bentonite pellets.

Procedure:

- 1) The surface area was cleared of debris by hand and a shallow hole dug (about 6 inches deep) with a hand trowel;
- 2) The auger was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger was scrubbed clean using analconox and distilled water mixture. After scrubbing, the auger was rinsed with thealconox/water mixture and then rinsed again with distilled water. The auger was rinsed with acetone to remove any residual materials, air dried, then given a final rinse with distilled water.
- 3) The soil materials encountered during the boring were logged by the geologist as they were brought to the surface;
- 4) A clean auger (the second) was used to collect the soil from the sample zone. The auger was advanced one foot and brought to the surface.

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- 5) The soil was removed from the auger. Only the interior portion (3 to 4 inches) of the soil was collected for later analysis. The top and the bottom of the sample was discarded. A portion of the sample was set aside for field analysis.
- 6) The soil sample for laboratory analyses was placed in a wide-mouth amber jar or septum vials with a teflon-lined screw cap. A sample label was prepared showing the sample number, depth of collection, date, an analysis was conducted. A Chain-Of-Custody control form was prepared.
- 7) The soil sample bottles were placed in a storage cooler at 4° C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples were refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis was decontaminated using the procedure detailed in Item 2 above.
- 9) At the completion of the boring, the bore hole was backfilled with bentonite.

KHOV006171

WASTE CLASSIFICATION SOIL SAMPLING PROCEDURES

The following information details the Waste Classification Soil Sample Collection Procedures. These procedures represent methods utilized to ensure the validity of soil samples collected at the site.

The composite soil samples will be collected in the following manner:

Equipment:

- o Two, 4-inch O.D., stainless steel hand auger;
- o Two, stainless steel hand trowels;
- o 5-quart stainless steel mixing bowl;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (1 gallon);
- o Acetone (1 gallon);
- o Plastic spray bottle applicators;
- o Wide-mouth, amber glass jars with teflon-lined screw caps;
- o Sample cooler/ice packs

Procedure:

- 1) One (1) composite soil sample will be collected each 100 cubic yards of excavation spoils. Each composite sample will be made up of four (4) individual soil samples. The soil samples will be collected from different boring depths to attain the most accurate representation of the waste spoils.
- 2) The auger will be advanced to the desired sampling depths, and the auger controls will be placed into a stainless steel mixing bowl. Following the collection of four (4) soil samples, the contents within the bowl will be thoroughly emptied on a bench-kote paper and divided into quarters. Only one quarter will be placed into a sampling jar.

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- 3) Upon completion of the sampling for that particular drum, the auger will be scrubbed clean, usingalconox and distilled water mixture. After scrubbing, the auger will be rinsed with aalconox/distilled water mixture and then rinsed again with distilled water. The auger will be rinsed with acetone to remove any residual materials, allowed to air dry, then given a final rinse of distilled water. The hand trowel and mixing bowl will also be decontaminated following the same procedures between sample collection.
- 4) The soil sample for laboratory analyses will be placed into a wide-mouth amber jar with a teflon-lined screw cap. A sample label will be prepared showing the sample number, date, and analysis to be conducted. A Chain-of-Custody Control form will also be prepared.
- 5) The soil sample bottles will be placed into a storage cooler at 4°C (ice packs) for transport to the J M Sorge, Inc. offices located in Somerville, NJ. The samples will be refrigerated until transferred to the laboratory for analysis.

KHOV006173

SURFACE SAMPLE COLLECTION PROCEDURE

Soil samples were collected from all sample locations in the following manner:

Equipment:

- o Two, 8-inch length stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon lined screw caps;
- o Sample cooler/ice packs;

Procedure:

- 1) The surface area was cleared of debris by hand and a shallow hole dug with a hand trowel;
- 2) The hand trowel was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the trowel was scrubbed clean using analconox and distilled water mixture. After scrubbing, the trowel was rinsed with thealconox/water mixture and then rinsed again with distilled water. The trowel was rinsed with acetone to remove any residual materials, air dried, then given a final rinse with distilled water;
- 3) The soil materials encountered during the sampling were logged by the geologist.

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- 4) The soil samples for laboratory analyses were placed in a wide-mouth amber jar or a septum vial with a teflon lined screw cap. A sample label was prepared showing the sample number, depth of collection, date, and analysis to be conducted. A Chain-of-Custody control form was prepared.
- 5) The soil sample bottles were placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples were refrigerated until transfer to the laboratory for analysis).

KHOV006175

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in U.S. EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with U.S. EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by U.S. EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in U.S. EPA Method 608. Solid samples are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Petroleum Hydrocarbons:

Water samples are analyzed for total petroleum hydrocarbons by I.R. using U.S. EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with SW-846 Method 3540, as modified by the Draft "N.J. DEP ECRA Sampling Plan Guide", Attachment 2 page 9, and analyzed by U.S. EPA Method 418.1.

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Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P - Inductively Coupled Plasma Emission Spectroscopy (ICP)
- A - Flame Atomic Absorption
- F - Furnace Atomic Absorption
- CV - Manual Cold Vapor (Mercury)

Water analyses are performed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition).

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

Element	Water Test Method		Solid Test Method	
	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

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Cyanide:

Water samples are analyzed for cyanide using U.S. EPA Method 335.2. Cyanide is determined in solid samples as specified in the U.S. EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using U.S. EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the U.S. EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

- Ignitability - Method 1020
- Corrosivity - Water pH Method 9040
Soil pH Method 9045
- Reactivity - Chapter 7, Section 7.3.3 and 7.3.4
respectively for hydrogen cyanide
and hydrogen sulfide release.
- EP Toxicity - Method 1310

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846
3rd Edition, November 1986.
- Standard Methods for the Examination of Water and
Wastewater, 16th Edition.
- Methods for Chemical Analysis of Water and Wastes,
EPA-600/4-79-020, 1979.

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